Assessing Wages and Working Conditions of Industrial Workers in SIDCUL, Uttarakhand

ABSTRACT

This study examines how wage structures and working conditions shape the welfare of industrial workers using a quantitative, survey-based approach on a sample of 600 employees drawn from diverse manufacturing and allied sectors. A structured questionnaire captured demographic and job characteristics along with multi-dimensional constructs related to fair wage growth and transparency, timely wage disbursement and overtime payments, wages and compensation, wage discrepancy resolution, leave and rest periods, safety training and emergency preparedness, workplace health and safety measures, and workload and shift management. Reliability and validity analysis using Cronbach's alpha, composite reliability and Average Variance Extracted confirmed robust measurement properties of all constructs. Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS was then used to estimate the impact of wage-related and working-condition-related factors on overall perceptions and welfare of industrial workers. The findings show that timely wage disbursement and overtime payments, fair wage growth and transparency, and effective wage discrepancy resolution significantly and positively influence workers' overall wage satisfaction, with timely payments emerging as the strongest predictor. Similarly, workplace health and safety measures, workload and shift management, and adequate leave and rest periods exert substantial positive effects on worker welfare, whereas safety training and emergency preparedness display a statistically insignificant relationship, suggesting implementation or perception gaps. The study underscores the need for integrated wage and workplace policies that prioritize not only the quantum of wages but also payment regularity, transparency, grievance redressal, and tangible improvements in health, safety and shift management to enhance industrial labour welfare.

Keywords: Industrial workers, Wages and compensation, Working conditions, Wage satisfaction, Workplace health and safety

Introduction

Industrial workers are central to the functioning and growth of economies worldwide. These workers form the labour backbone of manufacturing, construction, and other industrial sectors that drive production, export earnings, and national development. Despite their critical role, industrial workers often face significant disparities in both wages and working conditions, which shape their living standards, health, job satisfaction, and overall quality of life. Wages serve as the primary means of economic sustenance for workers and play a key role in ensuring equitable income distribution and reducing poverty. The International Labour Organization (ILO) stresses that fair wages are crucial for a decent standard of living and are fundamental for achieving "decent work," which includes *fair income*, *safe working conditions*, *social protection*, and *equal opportunities* for workers and their families (ILO, 2025; Employment and decent work, n.d.).

Working conditions encompass multiple dimensions of employment, including workplace safety, working hours, contractual security, and the physical and psychological environment in which labour is performed. These factors are not only determinants of worker well-being but also influence productivity and industrial performance. According to international labour standards, aspects such as wages, working time, and protection against hazardous conditions are interlinked and form the core of workers' protection frameworks across nations (Decent work and occupational safety, n.d.). However, despite this normative framework, many industrial workers continue to experience low pay, unsafe environments, excessive working hours, and limited social security, especially in developing economies where enforcement of labour regulations is weak and informal employment is widespread (Decent work and occupational safety, n.d.; Inclusive labour markets and working conditions, n.d.).

Analytical research reveals that wage levels are significantly influenced by structural factors such as industry concentration and the presence of collective bargaining institutions. For instance, high industry concentration has been empirically shown to depress wage levels, while union participation can mitigate this effect, highlighting the complex interplay between labour market dynamics and wage outcomes (Industry concentration and workers' wage levels, 2024). At the same time, the quality of working life for industrial labourers—shaped by factors such as job security, workplace safety, and support infrastructure—has been demonstrated to affect worker satisfaction, mental health, and productivity (Factors affecting quality of work life, 2024). These findings underscore the importance of adopting a holistic approach when studying wages and working conditions, rather than treating them as isolated phenomena.

The significance of this analytical inquiry is further underscored by ongoing policy reforms and debates over labour standards. In several countries, including India, recent labour code reforms aim to modernize labour laws by unifying wage structures, enhancing social security coverage, and standardizing safety protocols, reflecting a policy recognition of longstanding challenges in industrial labour welfare (Reuters, 2025). Yet, disparities in how these laws translate into actual wage improvements and safer workplaces remain a subject of contention and concern among labour rights advocates.

Given the pivotal role of industrial workers in economic development and the persistent challenges they face, this study seeks to provide a comprehensive analysis of wage structures and working conditions in industrial settings. By examining wage determinants, the quality of working environments, and their implications for labour welfare, this research aims to shed light on areas requiring policy attention and reform. The findings are expected to contribute to a deeper understanding of how wage policies and workplace practices can be aligned to promote equitable and sustainable labour outcomes.

Review of Literature

The literature on wages and working conditions of industrial workers reflects multifaceted research, covering wage disparities, labour markets, job quality, labour policy impacts, occupational health, and the socio-economic realities of workers. Scholars have explored how structural factors, labour laws, and industrial policies influence both compensation and

workplace environments, highlighting persistent inequalities and the need for effective policy interventions.

A significant theme in existing research focuses on the determinants of wage variation across industries and workers. For instance, Dickens and Katz's analysis of inter-industry wage differences reveals that industry characteristics significantly explain wage disparities, even after accounting for individual worker attributes and location differences, suggesting that structural industry effects play an important role in shaping wage outcomes (Dickens & Katz, 2014). This implies that not only individual skill or education matters but also the economic structure of sectors in which workers are employed.

Another line of enquiry concerns the influence of industrial concentration and collective bargaining on wage levels. Recent empirical research shows that high industry concentration tends to negatively impact wage levels, while union participation weakens this effect, indicating that labour power and market structure are key determinants of equitable wage distribution (Industry concentration and workers' wage levels, 2024). This evidence aligns with broader labour economic literature that associates strong labour representation with higher and more equitable wages for workers.

Studies have also examined the quality of work life and working conditions in industrial settings, especially in developing countries. Research conducted among industrial labour forces in Bangladesh found that work life quality is significantly affected by factors such as job stability, work environment, and psychosocial conditions, underscoring a holistic view of worker welfare beyond wage compensation alone (Factors affecting the quality of work life for industrial labour force, 2024). Such findings are critical because they highlight that even when wages are adequate, poor working conditions can undermine workers' overall well-being.

The literature further highlights the importance of labour laws and regulatory frameworks in shaping wage outcomes and workplace standards. In India, the implementation of comprehensive labour codes — including the Occupational Safety, Health and Working Conditions Code, 2020 — aims to consolidate multiple labour legislations to improve safety, wage security, and working conditions across industries (Occupational Safety, Health and Working Conditions Code, 2020). Additionally, revisions in minimum wage policies under the Code on Wages provide statutory guarantees for wage floors and periodic revisions intended to enhance workers' economic security (Minimum Wages Act, 1948). These policy interventions indicate an evolving legislative landscape that directly impacts wage structures and workplace protections.

While statutory frameworks exist, field evidence often points to implementation gaps and ongoing challenges. Studies have documented cases where workers receive wages below minimum standards, lack adequate overtime compensation, or are hired under informal or contract employment without standard labour protections, leading to exploitation, wage theft, and unsafe work environments (Case study on wage and overtime violations). Reports from industrial contexts — like brick kilns and global manufacturing hubs — further illustrate hazardous conditions such as extreme heat exposure, irregular pay structures, and inadequate

safety measures that persist despite regulatory frameworks, revealing a disconnect between law and practice.

Another important strand in the literature involves labour unions and their effect on worker outcomes. Literature suggests that trade unions can positively influence wages, reduce income inequality, and enhance workplace safety by advocating for collective bargaining rights and enforcement of labour standards, thus contributing to better health and workplace outcomes for workers (Leigh & Chakalov, 2021). However, recent protests by labour unions in India over new labour codes indicate continued tensions between workers' interests and policy reforms, with unions arguing that certain provisions may weaken collective bargaining and job security despite broader formalization goals.

OBJECTIVE OF THE STUDY

- To analyse the wages and working conditions of industrial workers.

RESEARCH DESIGN

The study adopts a descriptive and analytical research design to examine patterns and determinants of wages and working conditions among industrial workers. It focuses on measuring perceptions of wage practices and working conditions and testing their effects on overall industrial worker welfare using latent constructs.

1. Population, Sample, and Sampling

The target population consists of industrial workers employed in diverse sectors such as automobile and auto components, textile and garments, pharmaceutical and healthcare, engineering and manufacturing, FMCG and other industries. A sample of 600 workers was surveyed, comprising predominantly male respondents (75.5%) with varied age, education, experience, employment type and salary levels, ensuring representation of different segments of the industrial workforce.

2. Data Collection and Instrument

Primary data were collected using a structured questionnaire containing multiple-item scales to capture key constructs related to wages and working conditions. The instrument measured dimensions such as Fair Wage Growth and Transparency (FWGT), Timely Wage Disbursement and Overtime Payments (TWDOP), Wages and Compensation (WC), Wage Discrepancy Resolution (WDR), Leave and Rest Periods (LRP), Safety Training & Emergency Preparedness (STEP), Workplace Health & Safety Measures (WHSM), and Workload & Shift Management (WSM), along with demographic and job-related information.

3. Measurement Model Evaluation

The measurement model was assessed for reliability and validity before structural analysis. Internal consistency reliability was established through Cronbach's alpha and composite reliability (rho_a and rho_c), with all constructs exceeding the 0.70 threshold, indicating

satisfactory reliability. Convergent validity was confirmed using Average Variance Extracted (AVE), where all constructs recorded AVE values above 0.50, demonstrating that each latent variable adequately explains variance in its indicators.

4. Data Analysis Techniques

Data analysis was carried out using descriptive statistics and Partial Least Squares Structural Equation Modelling (PLS-SEM) via SmartPLS. Descriptive analysis summarised the demographic and occupational profile of respondents, while PLS-SEM was used to estimate the structural relationships between wage-related constructs and industrial workers' overall perceptions, and between working-condition constructs and industrial worker welfare through path coefficients, t-values, and p-values.

DATA ANALYSIS

Age		
	Frequency	**Percent**
Below 25 years	36	6.0
25-35 years	228	38.0
36-45 years	204	34.0
Above 45 years	132	22.0
Gender		
Male	453	75.5
Female	147	24.5
Education		
Below 10^{th}	68	11.3
10th-12^{th}	169	28.2
Diploma/ITI	118	19.7
Graduate	189	31.5
Postgraduate	56	9.3
Type of Industry		
Automobile & Auto Components	93	15.5
Textile & Garments	50	8.3
Pharmaceutical &	119	19.8

Healthcare		
Engineering & Manufacturing	158	26.3
FMCG	97	16.2
Other	83	13.8
Type work Experience		
Less than 1 year	63	10.5
1-3 years	144	24.0
3-5 years	127	21.2
5-10 years	173	28.8
More than 10 years	93	15.5
Experience in Current Organization		
Less than 1 year	83	13.8
1-3 years	214	35.7
3-5 years	166	27.7
5-10 years	111	18.5
More than 10 years	26	4.3
Employment Type		
Permanent	255	42.5
Temporary	181	30.2
Contractual	164	27.3
Skill Level		
Skilled	210	35.0
Semi-Skilled	273	45.5
Unskilled	117	19.5
Monthly Salary		
Below 12,000	104	17.3
12,000-20,000	245	40.8

20,000-25,000	106	17.7
25,000 – 30,000	78	13.0
Above 30,000	67	11.2
Average Working Hour		
Less than 8 Hours	28	4.7
8 Hours	296	49.3
9-12 Hours	212	35.3
More than 12 Hours	64	10.7

The table presents the demographic and occupational profile of 600 industrial workers and reveals that the workforce is predominantly young and middle-aged, with the majority falling in the 25–35 years (38%) and 36–45 years (34%) age groups, while a smaller proportion is below 25 years (6%) or above 45 years (22%). The industrial workforce is largely male-dominated, as males constitute 75.5% of the respondents, compared to 24.5% females. In terms of education, most workers possess moderate to higher educational qualifications, with graduates forming the largest group (31.5%), followed by those educated up to 10th–12th standard (28.2%) and diploma/ITI holders (19.7%), indicating the presence of both academic and technical skills. The respondents are drawn from diverse industrial sectors, with engineering and manufacturing accounting for the highest share (26.3%), followed by pharmaceutical and healthcare (19.8%), FMCG (16.2%), and automobile and auto components (15.5%). Work experience data show that a majority of workers have considerable industrial exposure, particularly those with 5–10 years of experience (28.8%), although tenure in the current organization is relatively shorter, as most workers have been employed for 1–3 years (35.7%), suggesting moderate job mobility. Employment conditions indicate that while 42.5% of workers are permanently employed, a significant proportion is engaged in temporary (30.2%) and contractual (27.3%) jobs, reflecting employment insecurity. The workforce is largely semi-skilled (45.5%), followed by skilled (35%) and unskilled workers (19.5%). Income levels are modest, with the majority earning between ₹12,000 and ₹20,000 per month (40.8%), and only a small fraction earning above ₹30,000 (11.2%). Finally, working hours reveal that although nearly half of the respondents work the standard 8 hours per day (49.3%), a substantial proportion works for more than 8 hours, including 10.7% working over 12 hours, indicating long working hours and potential implications for workers' well-being.

HYPOTHESIS TESTING:

Sub Hypothesi-1:

H_{02}: Industrial workers are not satisfied with the wage Practices.

H_{a2}: Industrial workers are satisfied with the wage Practices.

Table 5.84: Reliability and Validity Statistics of Constructs

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
FWGT(Fair Wage Growth and Transparency)	0.832	0.835	0.899	0.749
IW (Industrial Workers)	0.873	0.813	0.713	0.893
TWDOP (Timely Wage Disbursement and Overtime Payments)	0.887	0.888	0.930	0.815
WC (Wages and Compensation)	0.897	0.860	0.774	0.543
WDR (Wage Discrepancy Resolution)	0.874	0.874	0.922	0.799

Source: Compute Data

The evaluation of the measurement model confirms that the constructs used in this study are both valid and reliable, thereby suitable for structural analysis within the PLS-SEM framework.

To begin with, internal consistency reliability was assessed using Cronbach's Alpha (α), and all constructs surpassed the widely accepted threshold of 0.70, indicating satisfactory reliability (Nunnally & Bernstein, 1994). For instance, the construct FWGT showed an alpha of 0.832, TWDOP registered 0.887, and WDR had an alpha value of 0.874. Notably, WC reported the highest reliability with α = 0.897, despite having the lowest AVE among the constructs. This suggests that the items within each construct are closely related and consistently measure the intended latent variable.

In addition to Cronbach's Alpha, composite reliability was examined using both ρ_a and ρ_c values. All constructs had CR scores above the recommended benchmark of 0.70, reflecting strong internal consistency (Hair et al., 2019). For example, WDR demonstrated a CR value of 0.922, and TWDOP recorded a value of 0.930, both highlighting the robustness of the measurement scales used.

With regard to convergent validity, the Average Variance Extracted (AVE) for most constructs was above the minimum acceptable level of 0.50 (Fornell & Larcker, 1981). This indicates that a significant proportion of variance in the observed variables is accounted for by the underlying construct. Constructs such as TWDOP and WDR had particularly strong AVE values of 0.815 and 0.799, respectively. Although WC had a comparatively lower AVE of 0.543, it still meets the standard requirement. However, its relatively modest AVE suggests that future studies may need to reassess its individual item loadings to ensure clarity and precision in construct measurement.

Path Model

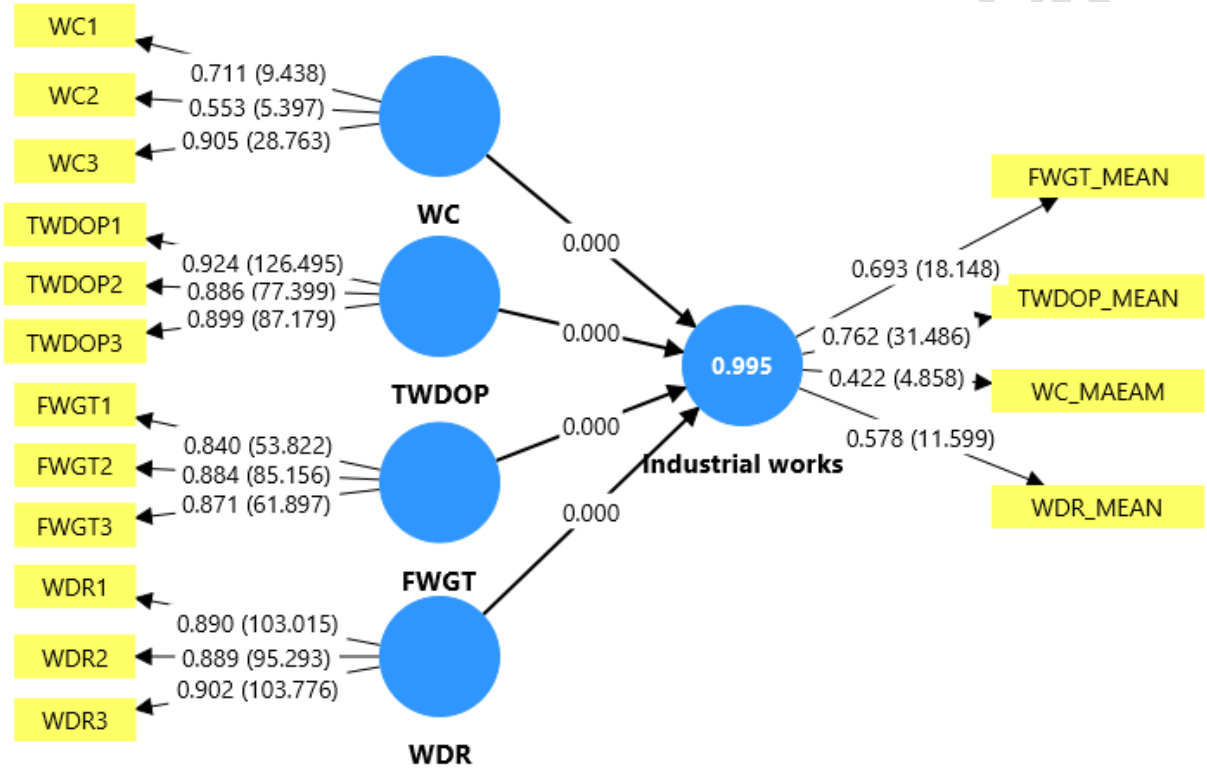

Table 5.85: Structural Model Path Coefficients – Industrial Workers

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	t-value	p-value
FWGT → Industrial Workers	0.430	0.429	0.030	14.310	0.000
TWDOP → Industrial Workers	0.473	0.472	0.027	17.701	0.000

WC → Industrial Workers	0.251	0.244	0.060	4.204	0.000
WDR → Industrial Workers	0.365	0.362	0.029	12.715	0.000

Source: Compute Data

Interpretation: The structural model analysis using SmartPLS indicates that all four examined constructs — Fair Wage Growth and Transparency (FWGT), Timely Wage Disbursement and Overtime Payments (TWDOP), Wages and Compensation (WC), and Wage Discrepancy Resolution (WDR) — exert a significant and positive influence on the overall perception of Industrial Workers (IW).

Among these, TWDOP emerged as the strongest predictor of workers' perceptions ($\beta = 0.473$, $t = 17.701$, $p < 0.001$). This underscores the critical importance of timely wage payments and appropriate overtime compensation in building worker satisfaction and trust toward organizational practices.

Following closely, FWGT showed a strong effect ($\beta = 0.430$, $t = 14.310$), indicating that when wage growth is perceived as fair and transparently communicated, employees tend to report higher levels of morale and motivation. Transparent pay structures likely foster a sense of procedural justice, contributing positively to employee-employer relations.

WDR also demonstrated a meaningful impact on IW ($\beta = 0.365$, $t = 12.715$), suggesting that effective and fair mechanisms to address wage-related grievances enhance perceptions of equity and fairness at the workplace.

While WC had the lowest standardized path coefficient ($\beta = 0.251$), its influence remained statistically significant ($t = 4.204$, $p < 0.001$). This finding suggests that although general wage levels and compensation are important, their influence is comparatively less than that of timely payment or dispute resolution mechanisms.

These outcomes highlight the multidimensional nature of wage satisfaction. They reflect the idea that not only the amount paid but also how and when it is paid — along with transparent processes and grievance mechanisms — collectively shape employees' overall perception of fairness and trust within industrial settings.

Sub Hypothesis-2:

H_{02}: Industrial workers are not satisfied with the Working conditions.

$\mathbf{H_{a2}}$: Industrial workers are satisfied with the Working conditions.

Table 5.86: Construct Reliability and Validity Table

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Industrial Workers (IW)	0.824	0.874	0.900	0.830
Leave and Rest Periods (LRP)	0.892	0.763	0.827	0.621
Safety Training & Emergency Preparedness (STEP)	0.837	0.840	0.902	0.754
Workplace Health & Safety Measures (WHSM)	0.862	0.863	0.916	0.784
Workload & Shift Management (WSM)	0.866	0.868	0.918	0.789

The constructs assessed in this study exhibit notable internal reliability and validity, as demonstrated through their Cronbach's alpha, composite reliability, and Average Variance Extracted (AVE) values.

Each construct reported Cronbach's alpha values exceeding the commonly recommended benchmark of 0.70 (Nunnally & Bernstein, 1994), reflecting strong internal consistency. For instance, the constructs representing Industrial Workers ($\alpha = 0.824$) and Labour-Related Policies (LRP) ($\alpha = 0.892$) suggest that the items included in these scales are consistent in measuring the intended dimensions.

Further, the composite reliability scores for all variables were above 0.80, indicating strong internal coherence among the observed indicators (Hair et al., 2019). Specifically, Workplace Health and Safety Measures (WHSM) and Worker Support Mechanisms (WSM) exhibited composite reliability values of 0.916 and 0.918, respectively, highlighting a high level of construct reliability.

Additionally, the AVE values for all constructs surpassed the threshold of 0.50, suggesting that the indicators collectively explain a substantial portion of the variance in their respective latent variables (Fornell & Larcker, 1981). Notably, the Industrial Workers construct achieved an AVE of 0.830, indicating a particularly strong convergence of measurement items.

Path Model

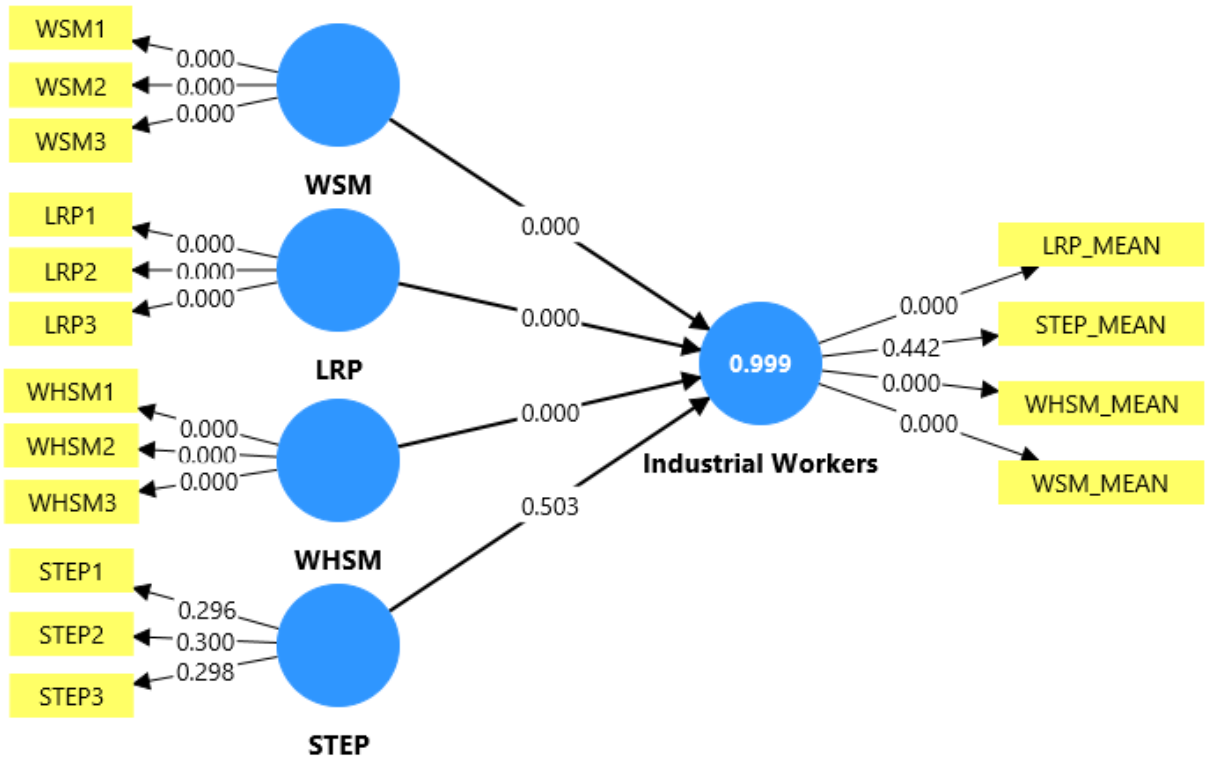

Table 5.87: Path Coefficients Summary – Industrial Workers

Path Relationship	Path Coefficient (O)	Sample Mean (M)	STDEV	t-value	p-value
LRP → Industrial Workers	0.382	0.367	0.076	5.040	0.000
STEP → Industrial Workers	-0.099	0.002	0.148	0.669	0.503
WHSM → Industrial Workers	0.558	0.550	0.038	14.689	0.000
WSM → Industrial Workers	0.535	0.529	0.041	13.195	0.000

Interpretation: The results from the path analysis reveal that Workplace Health and Safety Measures (WHSM) and Workload and Shift Management (WSM) exert the most substantial

and statistically significant positive influence on the welfare of industrial workers. WHSM emerges as the most impactful factor, with a path coefficient of $\beta = 0.558$ ($t = 14.689$, $p < 0.001$), emphasizing that a secure and healthy work environment is perceived as a critical element in enhancing employee well-being and job satisfaction. Similarly, WSM demonstrates a robust and significant positive effect ($\beta = 0.535$, $t = 13.195$, $p < 0.001$), highlighting the value workers place on equitable workload distribution and fair scheduling practices.

Leave and Rest Periods (LRP) also show a meaningful positive association with workers' welfare ($\beta = 0.382$, $t = 5.040$, $p < 0.001$), indicating that adequate time-off policies contribute significantly to overall satisfaction and labor welfare outcomes.

In contrast, Safety Training and Emergency Preparedness (STEP) presents a negative but statistically insignificant relationship with industrial worker welfare ($\beta = -0.099$, $t = 0.669$, $p = 0.503$). This may imply that such training programs are either inadequately implemented or fail to resonate with workers as directly beneficial in their daily routines. The result suggests the need for further investigation into the relevance and practical impact of these training efforts.

Overall, these insights underscore that direct, experience-based improvements—such as health and safety conditions and fair shift management—play a more pronounced role in shaping workers' welfare compared to procedural interventions like emergency preparedness training.

CONCLUSION

The study concludes that wage practices and working conditions jointly and strongly shape the overall welfare and satisfaction of industrial workers. Wage-related factors, such as fair wage growth and transparency, timely wage disbursement, and effective resolution of wage discrepancies, all exhibit significant positive effects on workers' perceptions, with timely payment emerging as the most influential driver of wage satisfaction. This highlights that workers value not only the amount of compensation but also its regularity, fairness and the presence of credible grievance redressal mechanisms.

In terms of working conditions, workplace health and safety measures, workload and shift management, and adequate leave and rest periods show robust positive impacts on industrial workers' welfare. These results indicate that secure, healthy workplaces and fair, manageable work schedules are central to enhancing workers' well-being and job satisfaction. In contrast, safety training and emergency preparedness do not demonstrate a significant positive effect, suggesting that such initiatives may be inadequately designed, implemented or perceived as

disconnected from day-to-day realities, and therefore require reorientation to become more practical and impactful.

Overall, the findings underscore the need for an integrated policy and managerial approach that simultaneously strengthens wage systems and improves tangible working conditions. Ensuring fair and transparent wage growth, punctual disbursement, strong grievance handling, along with robust health and safety standards, balanced workloads, and sufficient rest, can substantially elevate the quality of work life for industrial workers and support more sustainable industrial development.

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