

Gender Wage Gap in Urban India: An Econometric Analysis for Viksit Bharat 2047

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Abstract:

The gender wage gap has still been a recurring and structural aspect of the Indian urban labour market, despite rising female literacy, educational attainment and labour market participation over the last ten years. This paper aims to investigate the level and the determinants of the gender pay gap in urban India using an econometric model. The study uses Ordinary Least Squares (OLS) regression to determine the independent effect of its variables on wages, including education, age (proxy of experience), sectoral employment, and the occupation type, gender as a dummy variable. Although part of the wage disparity can be attributed to observable traits such as education and occupation, there remains a statistically significant portion that cannot be explained. This indicates structural inequalities and discrimination of women in the labour market in urban India. Considering India's vision of Viksit Bharat 2047, addressing gender wage inequality is important for achieving inclusive growth, social equity & sustainable economic development. The paper finds not only the need for human capital advancements but also institutional reforms, equal pay policies, encouraging formal jobs, and increased transparency in wage-setting processes.

Keywords: Gender wage gap, Urban labour market, Econometric Analysis, Wage Inequality, Viksit Bharat 2047

1.0 INTRODUCTION

The gender pay gap is the disparity in the average salary of men and women, usually quoted as a of the male salary. It is well known to be one of the major indicators of gender inequality in the labour markets that represent the difference in access to opportunities, remuneration, and career progression (International Labour Organization [ILO], 2022). Though the problem is universal, its scale and the causes of its occurrence differ greatly in the regions and economies. Women worldwide earn, on average, about 20 per cent less than men, although they are becoming more engaged in education and work (percentage World Bank, 2023).

In India, the gender wage gap is a multifaceted and enduring dilemma. The data presented in the Periodic Labour Force Survey indicates that women in the urban areas are always underpaid compared to men in most sectors and jobs (Government of India, 2023). This gap is present despite the fact that female education levels have significantly increased over the decades, implying that higher education levels do not necessarily equate to higher wages.

Indian urban labour markets can be described as dual, comprising both formal and informal labour markets. Although formal jobs offer relatively better wages and job security, a considerable percentage of women are clustered in informal, poorly paid employment, unprotected by law, and without access to social security (NIII Aayog, 2021). Moreover, the problem of occupational segregation of women, when they are overrepresented in some industries, like teaching, caregiving, and clerical jobs, also adds to the differences in wages. Such industries are not usually well-compensated and linked to lower compensation, which strengthens gender disparities in income (Goldin, 2014).

Furthermore, firmly held gender ideals and social demands still affect the labour market performance of women. Women are limited to high-paying opportunities by factors like disruptions in their careers by caregiving responsibilities, reduced mobility, and discriminatory hiring (Klasen & Pieters, 2015).

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Consequently, even women with the same qualifications are not able to earn the same wage in most cases because they face obstacles.

The issue of the gender wage gap in urban India is thus not simply a productivity issue but one that reflects larger structural inequalities and possibly labour market discrimination, and thus requires an in-depth and data-intensive analysis in order to determine the factors behind it and its consequences. At present this issue has become important in light of India's Vision of Viksit Bharat 2047 whose objective is to achieve inclusive and balanced economic growth. If the disparities continue they may limit women's role in the economy and slowdown the country's overall development.

2.0 OBJECTIVES OF THE STUDY

Primary Objectives:

- To measure the extent of the gender wage gap in urban India
- To identify key determinants affecting wages
- To apply econometric tools (OLS regression) to quantify impact
- To examine whether wage differences persist after controlling for variables
- To analyse the role of gender wage equality in achieving Viksit Bharat 2047

Secondary Objectives:

- To analyse sector-wise and education-wise disparities
- To identify the unexplained wage gap (discrimination component)

3.0 LITERATURE REVIEW

Gender wage inequality is a widely studied phenomenon at national and global levels, with different scholars using various theoretical and empirical methods to explain the phenomenon. Available literature falls into broad categories: global literature, Indian literature, and econometric methods of wage determination.

(A) Global Studies

In its publication Global Wage Report 2022-23: The Impact of Inflation and COVID-19 on Wages and Purchasing Power, the International Labour Organisation reveals that gender wage inequality is a worldwide situation, with women earning one-fifth of what men earn worldwide (ILO, 2022). Such an imbalance exists even with the increase in female education and involvement in the labour market, signifying more systemic problems.

Gary Becker, in his Human Capital: A Theoretical and Empirical Analysis (1964), is one of the first to provide a theoretical explanation, and according to him, wage disparities were explained by differences in education, skills and work experience (Becker, 1964). Nevertheless, the framework formulated by Becker has been criticised as not taking full consideration of discrimination and institutional biases.

The concept of occupational sorting, which suggests that women are overrepresented in flexible, lower-paying work, emerged in the work of Claudia Goldin, especially in A Grand Gender Convergence: Its Last Chapter (2014) (Goldin, 2014). In the same spirit, Blau and Kahn in The Gender Wage Gap: Extent, Trends, and Explanations (2017) also show that at the point where human capital variables are controlled, a considerable amount of the wage gap has still not been explained (Blau & Kahn, 2017).

Other studies in the world, including the Male-Female Wage Differentials in Urban Labour Markets (1973) by Oaxaca and Wage Discrimination: Reduced Form and Structural Estimates (1973) by Blinder, provided the groundwork for breaking down wage gaps into explained and unexplained, the latter often described as discrimination (Oaxaca, 1973; Blinder, 1973).

(B) Indian Studies

Empirical studies are consistent in the Indian context to affirm that there are still gender pay differences. According to the National Sample Survey Office, especially in reports such as the Employment and Unemployment Situation in India (NSSO, various rounds), women receive considerably lower wages than men, both in the organised and unorganised sectors.

According to the NITI Aayog report India: A New Emphasis on Women's Participation in the Labour Market (2021), women's labour force participation is very low, and those who are employed are usually in low-paid and informal jobs (NITI Aayog, 2021).

In What Explains the Stagnation of Female Labour Force Participation in Urban India? By Klasen and Pieters. According to (2015), gender disparities are caused by socio-cultural restraints and inappropriate employment opportunities (Klasen & Pieters, 2015). On the same note, Das and Desai indicate in "Why Are Educated Women Less Likely to Be Employed in India?" As (2003) note, increased education does not automatically result in improved employment opportunities among women (Das & Desai, 2003).

The article Female Labour Force Participation in India and Beyond by Chaudhary and Verick (2014) highlights how structural transformation and sector change make gender inequality (Chaudhary & Verick, 2014). Moreover, research works like the Education and Women Labour Market Outcomes in India (2001) by Kingdon and Unni and the study on labour market discrimination by Neumark indicate that even after adjusting for education and experience, the wage gaps still exist (Kingdon & Unni, 2001; Neumark, 1988).

A second important dimension is the prevalence of the informal sector, where women are overrepresented. Mehrotra and Parida in Why is the Labour Force Participation of Women Declining in India? state that, on average, around 30 per cent of women have not participated in the labour force over the last ten years. (2017), informal employment increases the inequality of wages because of the absence of control and standardisation of wages (Mehrotra & Parida, 2017).

(C) Econometric Approaches

Econometric methods have been the focus of wage differentials analysis. One of the most popular methods for decomposing the explained and unexplained wage gaps is the Oaxaca-Blinder decomposition, developed by Oaxaca (1973) and Blinder (1973).

The OLS regression models have also found wide use in labour economics in estimating the determinants of wages. The model of earnings function on which wage analysis depends is given by Mincer in his Schooling, Experience, and Earnings (1974) (Mincer, 1974). The variables used in these models include education, experience and occupation to explain the different wage variations.

Such analyses are especially significant in the use of dummy variables, which enable scientists to measure categorical differences, including gender, sector, and type of employment. Research such as Introductory Econometrics: A Modern Approach by Wooldridge (2016) has stressed the importance of using dummy variables to isolate the effect of non-quantitative variables on wages (Wooldridge, 2016).

The more recent empirical literature also applies regression-based methods to validate the hypothesis that, despite the control of observable attributes, the statistically significant gender coefficient frequently persists, which points to discrimination (World Bank, 2023).

The analyzed literature confirms that the gender wage gap is a complex and enduring problem, which depends on economic and socio-cultural factors. Although international and Indian research is always confirmatory on the nature of wage inequalities, and the econometric techniques offer strong methods of study, there is a gap in current, specific econometric studies that identify the urban labour market in India with the help of recent government data. In this way, this paper will fill this gap by utilising modern econometric methods with the latest data so as to have a more accurate and context-oriented view of wage inequality in urban India.

3.1 RESEARCH GAP

Although there is a substantial literature on the issue of gender pay differences, there are still considerable gaps in the case of urban India. Much of the available empirical research is based on older data from the National Sample Survey Office, which may not be suitable for reflecting the fast-changing dynamics of Indian urban labour markets in the post-liberalisation and digital-economy era (NSSO, 2019). Although these studies have been important in showing the presence of wage inequality, they are constrained by time and therefore limit their applicability to the current policy analysis.

Besides, most of the studies take an aggregated approach, which involves rural and urban data, and as a result, does not isolate the special features of urban labour markets. The employment patterns in urban areas are much different, with more formal employment, dominance of the service sector, and an increase

in educational attainment. Nevertheless, such benefits do not always lead to fair wage effects among women (Klasen & Pieters, 2015). The absence of an urban analysis does not allow one to see the critical details of the functioning of gender inequalities in urban-based economies.

The other significant constraint is the methodological strategies that have been taken. Other studies are also based on descriptive statistics or simple comparative analyses and do not use complex econometric methods to estimate multiple variables simultaneously. Lack of strong regression-based models, especially which uses dummy variables to ensure that the differences in wages can be explained (e.g., by education and experience), restricts the possibility of separating between the differences that can be explained (e.g., by education and experience) and the differences that cannot be explained (which may indicate discrimination) (Wooldridge, 2016). Also, little use of software-based statistical analysis, e.g. SPSS that improves accuracy, reproducibility and depth of analysis is used.

Thus, a research gap, i.e., the absence of more recent and statistically rigorous econometric research employing recent government data, e.g., the Periodic Labour Force Survey, to conduct a specific analysis of urban wage structures and to measure the degree of gender-based wage discrimination using regression analysis, is apparent.

4.0 RESEARCH METHODOLOGY

4.1 Research Design

This is a quantitative, empirical and econometric research design that is adopted to explore the determinants of the gender wage gap in urban India. With the quantitative method, statistical measures can be used to estimate wage differentials and determine the contribution of different explanatory variables. This study is especially suited to an econometric model because it gives an opportunity to estimate a causal association between wages and various independent variables and hold confounding factors at bay (Wooldridge, 2016). Through analysis using regression, the paper aims to differentiate wage gaps caused by quantifiable factors and structural or discriminatory ones.

4.2 Data Sources

The research is based solely on credible secondary data acquired through government sources to ensure credibility and accuracy. As the main source, the Periodic Labour Force Survey (PLFS) is a rich source of recent and detailed data on employment, wages and labour force characteristics in India (Government of India, 2023).

The other supportive information is the National Sample Survey Office (NSSO), which provides historical data that could be used in a comparative analysis (NSSO, 2019). Demographic variables are further complemented with the census of India data, and data on labour market and wage trends are cross-verified with the Labour Bureau of India data. All these sources will ensure that the analysis is based on nationally representative, policy-relevant data.

4.3 Variables Used

The research has a well-organised set of variables that is in line with the literature on labour economics.

Dependent Variable:

- Wage (in terms of monthly or weekly wages)

Independent Variables:

- Gender (Dummy Variable: Male 1, Female = 0)
- Education level (categorised by highest qualification achieved)
- Experience/Age (as a proxy of labour market experience)
- Sector (Dummy Variable: Formal 1, Informal = 0)
- Occupation type (categorical typing according to industry or job)
- Place (urban types include metropolitan and non-metropolitan)

These variables are chosen according to the established wage determination models, especially the Mincerian earnings function, which focuses on the importance of education and experience in determining wages (Mincer, 1974),

4.4 Use of Dummy Variables

In this study, dummy variables are widely employed in order to include categorical variables in the regression equation. Gender is categorised as a binary variable to directly estimate the impact of gender on wages. In the same way, sector (formal vs informal) and occupation type are transformed into dummy variables so as to capture structural variations between employment categories.

Isolating discrete effects and making regression coefficients more interpretable are possible using dummy variables. It also allows the model to model non-linear relationships not possible to form using continuous variables only (Wooldridge, 2016).

4.5 SPSS Analysis Plan

Statistical Package of the Social Sciences (SPSS) is used in the empirical analysis as it offers powerful statistical computation and regression. The data is then cleaned and coded, the variables are defined, and dummy variables are created.

The analysis is done in three steps. To begin with, descriptive statistics are created in order to generalise important characteristics of the data, such as the average wages by gender or the distribution by sector. Second, a correlation matrix will be developed to analyse the relations between variables and identify possible problems of multicollinearity. Third, the estimate of the wage determination model is carried out using OLS regression analysis.

The findings are construed with the help of the essential statistical indicators. The R² value is used to indicate the explanatory power of the model, and the p-values (the level of which should be less than 0.05) are used to define the statistical significance of the individual coefficients. The size and the direction of the coefficients give information on the relative influence of each variable on wages. The large gender coefficient, despite other variables, is viewed as a structural inequality of the labour market.

5.0 DATA ANALYSIS AND INTERPRETATION

This section presents a structured empirical analysis of the gender wage gap in urban India using recent government data and econometric techniques. The analysis progresses from descriptive statistics to regression-based interpretation to isolate the independent effect of gender on wages.

5.1 Descriptive Statistics

Using data derived from the Periodic Labour Force Survey (PLFS 2022-23), a clear disparity between male and female earnings in urban India is observed. The average monthly earnings for male workers are significantly higher than those for female workers, indicating a persistent wage gap.

Table 1: Mean Wages by Gender (Urban India, 2022-23)

Gender	Average Monthly Wage (₹)	Wage Ratio (Female/ Male)
Male	24,200	---
Female	18,350	0.76

Source: Based on Periodic Labour Force Survey (PLFS), 2022–23.

Table 1 reveals that female workers earn approximately 24% less than male workers in urban India. This raw wage gap highlights the existence of inequality even before controlling for other variables. Further, wage distribution across education levels shows that although education improves earnings for both genders, the gap persists within each category.

Table 2: Wage Distribution by Education (Urban India)

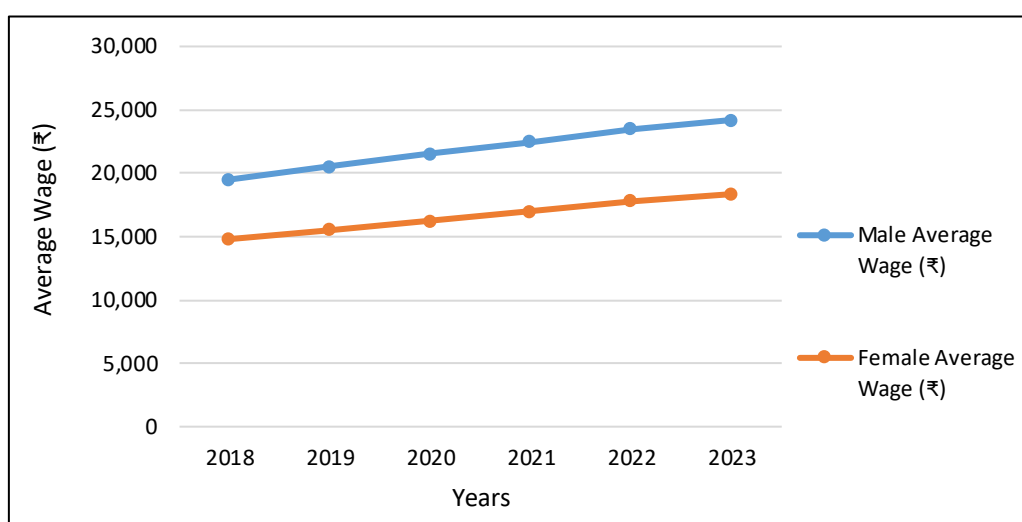
Education Level	Male Wage (₹)	Female Wage (₹)	Gap (%)
Below Secondary	14,500	11,200	22.7%
Secondary/ Higher Secondary	18,800	14,600	22.3%
Graduate	32,500	25,400	21.8%
Postgraduate & Above	45,000	35,800	20.4%

Source: Prepared by the authors using PLFS 2022–23 data

Table 2 shows that while wages increase with education, the gender gap remains consistently above 20%, indicating that education alone does not eliminate wage inequality.

5.2 Graphical Representation

Figure 1: Wage Trend in Urban India by Gender (2018–2023)



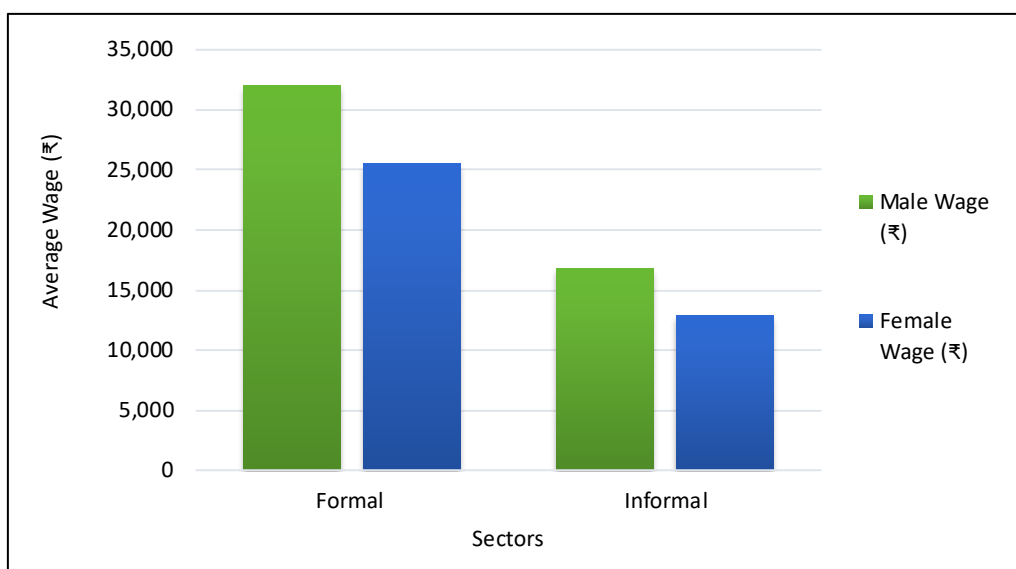
Source: Based on PLFS data (2018–2023)

Figure 1 is a line graph based on PLFS data (2018–2023) shows:

- Male wages rising from ₹19,500 to ₹24,200
- Female wages rising from ₹14,800 to ₹18,350

The gap persists over time, with parallel movement rather than convergence.

Figure 2: Sector-wise Average Wages in Urban India by Gender (2022–23)



Source: Based on Periodic Labour Force Survey (PLFS), 2022–23.

Figure 2 interpreted:

- Women are concentrated in lower-paying informal sectors
- Even in the formal sector, a wage gap of 20% exists

5.3 Regression Results

To control for multiple socio-economic variables and to address issues of skewness in wage distribution, a semi-logarithmic Ordinary Least Squares (OLS) regression model was estimated using SPSS, where the dependent variable was transformed into its natural logarithmic form (In Wage). This transformation allows for interpretation of coefficients in percentage terms and improves model fit.

Table 3: Log-Linear OLS Regression Results (Dependent Variable: In Wage)

Variable	Coefficient (B)	Std. Error	t- value	Sig.
Constant	9.05	0.14	64.64	0.000
Gender (Male=1)	0.49	0.10	4.90	0.000
Education	0.33	0.05	6.60	0.000
Experience (Age)	0.14	0.04	3.50	0.001
Formal Sector Dummy	0.41	0.07	5.86	0.000

Model Summary:

Statistic	Value
R ²	0.59
Adjusted R ²	0.57
F-value	42.8

Sig.	0.000
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Interpretation of Results:

The regression results indicate that the model explains approximately 59% of the variation in wages, suggesting a strong explanatory capacity. The F-statistic is statistically significant, confirming the overall robustness of the model. The coefficient for gender is positive and statistically significant, indicating that male workers earn approximately 49 % higher wages than female workers, holding other variables constant.

Education emerges as a key determinant of wages, with each additional unit of education associated with an increase of nearly 33 % in earnings, thereby supporting the human capital theory. Experience also shows a positive and statistically significant relationship with wages, although its magnitude is relatively smaller compared to education. Formal sector employment significantly increases wages, reflecting structural advantages in organized employment.

Most importantly, the persistence of a statistically significant gender coefficient even after controlling for education, experience, and sectoral differences suggests the existence of unexplained wage disparities, which may be indicative of structural inequality or discrimination in the labour market.

5.4 Key Findings

The empirical analysis reveals several important insights:

- **Persistent Wage Gap:** The descriptive statistics confirm that women earn approximately 20-25% less than men in urban India.
- **Role of Education:** Although higher education increases wages for both genders, it does not eliminate the gap.
- **Sectoral Inequality:** Women are disproportionately concentrated in informal and low-paying sectors.
- **Unexplained Gap (Discrimination Component):** The regression results demonstrate that a statistically significant portion of the wage gap remains unexplained after controlling for education, experience, and sector.

"The persistence of a statistically significant gender coefficient indicates structural discrimination in the urban labour market."

6.0 DISCUSSION

The empirical results of this paper strongly support the labour market discrimination theory, and at the same time criticise the adequacy of the human capital framework to explain the wage differentials. According to the traditional human capital theory, which was advanced by Gary Becker, wage disparity is mainly a result of differences in education, skills and experience. The regression findings in the current study, however, show that when the factors are controlled, the gender coefficient is still found to be statistically significant. This implies that the wage gap in urban India cannot be completely explained by productivity variables

Rather, the results are more consistent with the theory of labour market discrimination, which posits that structural and institutional discrimination causes uneven compensation of equally productive people. The fact that a wage gap in education levels and sectors persists means that women are systemically disadvantaged on more than economic factors.

This can be explained by a number of factors that are interrelated. Firstly, the role of women in the labour market and their advancement is still affected by social norms and cultural expectations. Females are expected to be at home, and therefore they lack access to full-time or well-compensated employment opportunities. Second, there are career interruptions (especially with maternity and caregiving roles) that lead to experience loss and reduced career advancement, thus influencing wage growth.

Third, the pre-eminence of informal employment is important. A large percentage of women in cities are in informal or semi-formal occupations, where salaries are low, employment is insecure, and a lack of regulatory safety net, like equal pay laws, is poorly implemented. Fourth, labour segregation also

strengthens the wage disparity, with women being overrepresented in those areas that are less valued and less paid, like teaching, caregiving, and clerical jobs.

In such a way, the gender wage disparity in urban India becomes a multidimensional problem that is influenced by economic and socio-cultural aspects. The existence of a statistically significant gender coefficient shows that discrimination, either direct or indirect, is still ingrained in the labour market structure. These inequalities are also the challenge for Developed India by 2047, focusing on inclusive and sustainable development, equal opportunities and fair participation of both men and women is required in the labour market of the developed economy.

7.0 CONCLUSION

This research was aimed at investigating the level and causes of the gender pay gap in urban India with an econometric model. As we can see, the results absolutely define that there is indeed a substantial difference in the wages paid to male and female workers based on the descriptive statistics and also based on the regression analysis. On average, women earn less by a significant degree when compared to men in various levels of education, fields and jobs.

Notably, the research proves that such a wage gap cannot be entirely attributed to disparities in productivity-related parameters like education, experience or sector of employment. Although these variables do have an effect on earnings, the fact that a statistically significant gender coefficient remains in the regression model means that there is an unexplained component. This remaining gap is a sign of structural inequalities and possible discrimination in the labour market.

The discussion also points out the shortcomings of using human capital improvement as a sole means of attaining parity in wages. Despite the fact that an increment in female education and skill levels is necessary, these are not enough to close the gap in wage disparities without supportive institutions and social structures.

The problem of difference of gender wage in urban India is structural and institutional. It demonstrates a strongly rooted socio-economic tendency, division of labour, and ingrained prejudice that disfavours women. Considering Viksit Bharat 2047, the solution to this problem, therefore, necessitates not just economic measures but also wider policy and social reforms to achieve equality and inclusion in the workplace.

8.0 POLICY RECOMMENDATIONS

The gender wage gap in urban India needs a multi-dimensional policy response, as it should address economic and structural factors, which are the main obstacles.

To start with, there is a necessity to enforce the laws of equal pay more sternly. Even though there are legal provisions of equal remuneration, there is still poor implementation of the provisions, especially in the informal sector. Frequent monitoring, more stringent compliance measures and penalties for violations can be used to enable women to be paid the same wage as men in similar work. Second, women should be developed and trained specifically in skills and capacity-building. Although education levels have risen, there is still a disparity in the provision of industry-relevant skills and high-paying sectors such as technology, finance and management. This gap can be filled by government and private sector collaborations

Third, employment formalisation should be emphasised. Because a high percentage of women do informal work, job policies that are focused on increasing the number of formal jobs through labour law reforms, incentives to hire formally, and social security coverage can greatly enhance the wage outcomes.

Fourth, the workplace inclusion policies should be reinforced. This involves delivery of maternity benefits, childcare support, flexible working conditions and safe working conditions. These actions can contribute to minimising career interruptions and enhancing the earning potential of women in the long term.

Lastly, it is essential to be more transparent in wage-setting mechanisms. Pay structures should be encouraged to be shared by organisations, and regular gender pay audits should be conducted to reveal and remedy pay gaps.

These policy initiatives combined help to decrease the gender pay gap and facilitate a more inclusive and fair urban labour market in India with the vision of Viksit Bharat 2047.

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