

EXPLORING THE DETERMINANTS OF WOMEN'S LABOUR FORCE PARTICIPATION IN PAKISTAN

Waqas Shair^{*1}, Malik Arshad², Muhammad Asif³, Asma Halim⁴

^{*1}Senior Lecturer, School of Economics & Finance, Minhaj University Lahore, Pakistan

²Director, LOH-O-QALAM Group of Colleges, Lahore, Pakistan

³Independent Researcher, Lahore, Pakistan

⁴Assistant Professor, Department of Business Administration, Iqra University, Islamabad

^{*1}waqasshair689@gmail.com

^{*1}<https://orcid.org/0000-0001-6495-2922>

Corresponding Author: *

Received	Revised	Accepted	Published
03 December, 2024	03 December, 2024	18 December, 2024	25 December, 2024

ABSTRACT

This study is an attempt to empirically examine the impact of socioeconomic, demographic, regional, and personal traits on women's labour participation in Pakistan. The study uses Pakistan Labour Force Survey 2020-2021. The sample size for the female aged 15 or above who are currently not enrolled in any educational institute are 154,408. The logistic regression findings highlight provincial disparities, showing that women in Punjab and Sindh are more likely to participate in the labor force, whereas women in Balochistan are less likely to engage compared to those in KPK. Urban women are less likely to participate than rural women. Currently married women and formerly married women are less likely to participate compared to never-married women. Age positively impacts participation initially, but this effect diminishes with age due to inverted U-shape relationship. Education shows contrasting effects: higher education increases participation, while primary, middle, and secondary education reduce participation. Job training is a strong predictor, with off-the-job training increasing participation. Native women are more likely to participate than migrants, while women with disabilities are 39.4% less likely to engage in the labour force. These findings highlight critical demographic and socio-economic disparities.

Keywords: Women, Labour Participation, Socioeconomic, Demographic, Labour Force Survey.

INTRODUCTION

Women's labour participation is crucial for economic growth, as it increases the labour supply, productivity, income, welfare, and gender equality (Kabeer, 2021). It boosts the size and quality of the labour force, especially in countries facing labour shortages. Women bring diverse skills, perspectives, and innovations, enhancing competitiveness and diversification. As per financial hypothesis, human resources is a fundamental element of creation and enters underway capabilities with a positive co-

productive. They also contribute to income and welfare by increasing their own earnings and bargaining power within households (Doss, 2013). Women participation in labour market allows the household to spend more on health, education, and nutrition, promoting human capital development and poverty reduction. Women also gain more voice and agency in public and private spheres.

As the effectiveness of the females increases, so do the profits and income. The level of training for

both women and men directly impacts the availability of skilled workers, which in turn affects productivity and economic growth. Traditional financial experts such as Becker (1965), and Mincer and Jovanovic (1981) believe that schooling plays a crucial role in influencing women's participation in the workforce. It is believed that differences in paid work can be attributed to variations in investment in human resources, such as education and training. The workforce cooperation rate reflects the amount of work available in the economy and the composition of the country's human resources. The writing highlights a correlation between differences in training orientation and financial development.

Educationists recognize the importance of female in the process of development of society and economy as a whole and considered the women as most important human resources. It is commonly realized that training empowers women to challenge their customary jobs and obligations and to transform them into modern one (Eckstein & Lipshitz, 2011). There exist major areas of strength for a positive connection between female workforce investment and level of schooling. As cited in Schultz (1973) that as the females become human capital due to attaining higher education and participate in labour market, the less would be the quantity of kids. As a result, increasing women's education could be used as a potential strategy to boost female participation in the workforce and reduce population growth by lowering fertility rates.

The participation of women in the labour force is a critical factor for the economic growth, social development, and gender equity of a nation. Understanding the factors that influence women's labour force participation is essential in a country where 4 out of 5 females are out of labour force. The existing literature in context of women participation is, including Ejaz (2007); Ejaz (2011); Faridi et al (2009); Mujahid (2020); and Shair et al., 2023a; 2023b; 2024). The studies are limited to either primary data or based on traditional approaches of estimation simply the descriptive. These studies also unable to explore the factors affecting the employment choice of women by conducting a comprehensive study by using the nationally representative dataset.

This study seeks to address a significant gap in the literature by empirically examining the interplay of

socioeconomic, demographic, regional, and personal traits on women's labour participation. The findings of this study will provide valuable insights into how various factors such as age, region, geographical location, education, marital status, training, migrant, and functional disability impact women's decisions to enter the workforce. Furthermore, this research will contribute to evidence-based policymaking by highlighting key determinants that can be targeted to enhance women's economic inclusion and empower them to play an active role in national development.

2. Literature Review

Findings of Ejaz (2007) indicated that factors such as age, level of education, and marital status have a significant influence on the participation of women in the labour force. Women residing in nuclear families and households with vehicle accessibility demonstrated a higher likelihood of engaging in economic activities. According to the study, addressing child care responsibilities and prioritising education may lead to higher rates of female labour force participation in Pakistan. Ntuli and Wittenberg (2013) found that while there has been a rise in women joining the workforce in South Africa, their participation rates still lag behind men and historically disadvantaged groups. Factors influencing low rates of participation include education, non-labour income, marriage, fertility, and geographical variations. Faridi et al (2009) found that educational attainment levels significantly impact female labour force participation, with higher education levels leading to increased participation, while early-age children reduce it. Therefore, female education is crucial for better employment opportunities.

Ejaz (2011) revealed connections between female labour force participation, fertility rates, and wage disparity between genders. Mujahid (2014) suggested that promoting cottage industries, and restructuring the informal sector encourage female labour supply to participate in economic and productive activities. According to Sauré and Zoabi (2014), the presence of more women in growing industries is associated with an increase in the gender wage gap and a decline in female labour force participation. Afridi et al (2018) observed that there has been a significant decrease in women's

employment rates in India over the last few decades. The shifts in the balance between home production and market production for educated women may have had a negative impact on female labour force participation in rural India.

Che and Sundjo (2018) delve into the various factors that impact female labour force participation in Cameroon. They examine aspects such as the working status of spouses, household characteristics, and religion. Findings indicate that the labour market participation of women is influenced by factors such as having non-working husbands, being older, and living in households. On the other hand, women's participation is reduced when they have young children aged 0-5 years and when they identify as Muslim. Mujahid (2014) studied the factors affecting female labour supply in Pakistan, revealing that as women grow older, their participation in the labour force increases due to limited educational opportunities, lack of experience, and insufficient training. Higher education levels increase the likelihood of women engaging in productive activities. Singh (2022) highlighted education, marriage, and household job availability as positive factors for women's labour participation, while family size, urbanization, and regional factors negatively impact it. Govindapuram

et al. (2023) emphasized that household economics, individual traits, and gender norms significantly influence women's access to finance in India.

3. Methodology

In the study we are analyzing the determinants of labour force, where the dependent variable is dichotomous dummy-dependent variables, the literature usually suggests using the Logit model to compute the probability of the covariates (Greene, 2017; Gujarati, 1995). The logistic regression model is as follows:

$$P_i = E\left(y_i = \frac{1}{X_i}\right) = \Lambda(Z)$$

$$= \frac{e^z}{1 + e^z}$$

$$Z_i = X\beta$$

P_i stands for the probability that female will work y_i is binary dependent dummy variable coded as 1 if female participate in labour and otherwise 0. While $Z_i = X\beta$, where X is the vector of variables made up of covariates on socioeconomic, demographic, regional and personal traits. β is vector of coefficients. The definition of the variable used in the study related to equation 1 is given in the table 1.

Table 1. Definition of the variables used in study

Variables	Description
Labour force	The dependent variable is labour participation of women. The labour participation is adopted from the definition of labour force which includes the employed and unemployed individuals. In this study, dependent variable coded 1 if women either employed or unemployed, 0 otherwise.
Province	A multinomial categorical variable which consist of four province of Pakistan i.e. KPK, Punjab, Sindh, and Balochistan. Reference category is KPK province.
Urban	A dichotomous variable, coded 1 for urban dwellers, 0 otherwise. Reference category is rural dwellers.
Marital status:	A multinomial categorical variable which consist of three categories i.e. never married, currently married, and formerly married. Reference category is never married individuals.
Age	Age in years old.
Education	An ordinal categorical variable which consist of five categories i.e. no formal education, primary, middle, secondary and higher. Reference category is no formal education.
Job training	A multinomial categorical variable which consist of three categories i.e. no training, on job training, and off job training. Reference category is no training.
Native	A dichotomous variable coded 1 for individuals born in the given district, 0 otherwise.

	Reference category is migrant individuals.
Disability	A dichotomous variable coded 1 for individuals who responded any functional disability, 0 otherwise. Reference category is individual without disability.

4. Data and Descriptive analysis

4.1 Data source

The study uses Pakistan Labour Force Survey 2020-2021. The survey is available at the official website of the Pakistan Bureau of Statistics. The labour force survey is a household survey and covers all members of household. This study is an individual level study and analysis carried out using the individual level information. The labour force survey covers socio-economic, demographic, and labour market outcome related information like wage, labour supply, nature of work, unemployment etc. The number of household in the in the survey was 99,904. However, the sample size for the female aged 15 or above who are currently not enrolled in any educational institute are 154,408.

4.2 Descriptive analysis

Table 2 provides a detailed analysis of labour force participation and employment dynamics in a sample of 154,408 observations. It reveals that 23.67% of the population is employed, with a mean value of 0.2367429, while only 1.52% is unemployed, indicating a low proportion of job seekers women. A significant majority, 74.81% of the women population, is not participating in the labour force. Conversely, only 25.19% of the population is part of the labour force. The standard deviation values indicate moderate variation in employment and labour force participation status. These findings highlight a substantial level of economic inactivity within the population, possibly influenced by structural, social, or economic barriers that limit workforce entry for a large segment of the population.

This table presents labour participation trends across four provinces using a sample of 154,408 observations. The mean values indicate the proportion of individuals from each province within the sample. Khyber Pakhtunkhwa (KP) accounts for 20.78% of the sample, with 14.36% participating in the labour force and 22.94% not participating. Punjab represents the largest share at 44.07%, with a higher labour participation rate (59.50%) compared to its non-participation rate (38.87%). Sindh contributes 23.46% of the sample, with

19.59% participating in the labour force and 24.76% not participating. Balochistan, the smallest contributor, accounts for 11.69% of the sample, with 6.54% labour participation and 13.42% non-participation. These statistics suggest significant regional variation in labour participation, with Punjab showing the highest engagement in the labour force, while Balochistan and KP exhibit lower participation rates.

Out of 154,408 observations, approximately 74.98% of individuals reside in rural areas, while 25.02% live in urban areas. The standard deviation for both rural and urban regions is 0.433, with values ranging from a minimum of 0 to a maximum of 1. Among those participating in the labour force, 88.24% are from rural areas, compared to 11.76% from urban areas. Conversely, among those not participating in the labour force, 70.51% are rural residents, and 29.49% are urban residents. This highlights a greater proportion of labour force participation among rural populations compared to urban populations.

Overall, 17.07% of the sample has never been married, 75.51% are currently married, and 7.42% are formerly married. Among those participating in the labour force, 18.81% have never been married, 76.17% are currently married, and 5.02% are formerly married. Conversely, among those not participating in the labour force, 16.48% have never been married, 75.28% are currently married, and 8.23% are formerly married. Regarding age, the mean age of the entire sample is 35.82 years, with a standard deviation of 14.85 and a range from 15 to 99 years. Labour participants have a slightly younger mean age of 33.74 years, while non-participants have a mean age of 36.52 years. This highlights differences in marital status and age between labour participants and non-participants.

The table summarizes the educational attainment of individuals within a sample of 154,408 observations, segmented by labour force participation. Overall, 64.51% of individuals have no formal education, 13.29% have completed primary education, 6.66% have completed middle school, 10.94% have secondary education, and 4.60% have higher education. Among those participating in the labour

force, a higher proportion (67.79%) have no formal education, while the percentages for primary, middle, secondary, and higher education are 11.92%, 4.56%, 7.27%, and 8.46%, respectively. In contrast, non-participants are slightly less likely to have no formal education (63.41%) but show higher proportions of primary (13.76%), middle (7.36%), and secondary (12.18%) education, with only 3.30% attaining higher education. These figures highlight significant differences in education levels between labour participants and non-participants, with participants more likely to have no formal education or higher education.

In the study, 90.30% of individuals have no job training, 9.14% have received on-the-job training, and only 0.55% have received off-the-job training. Among those participating in the labour force, a slightly lower proportion (84.74%) have no training, while a higher percentage (13.75%) have on-the-job training and 1.52% have off-the-job training. In contrast, among those not participating in the labour

force, 92.18% have no training, with only 7.59% having on-the-job training and 0.23% receiving off-the-job training. These findings indicate that labour force participants are more likely to have job training, particularly on-the-job training, compared to non-participants.

Regarding migration, 11.39% of the total sample are migrants, while 88.61% are non-migrants. Among labour participants, 10.89% are migrants, compared to 11.55% among non-participants, showing minimal differences in migration status between the two groups. For disability status, 90.30% of the total sample have no disabilities, while 9.70% have disabilities. Labour force participants are more likely to have no disabilities (95.16%) compared to non-participants (88.67%). Conversely, the proportion of individuals with disabilities is higher among non-participants (11.33%) compared to participants (4.84%). These findings suggest that disability status has a more pronounced association with labour force participation than migration status.

Table 2. Descriptive analysis

Variables	Whole sample					Labour participating	Not labour participating
	Observations	Mean	Std. dev.	Min	Max	Mean	Mean
Employed	154,408	.2367429	.4250846	0	1		
Unemployed	154,408	.0152	.1223481	0	1		
Not in labour force	154,408	.7480571	.43413	0	1		
Labour force							
No	154,408	.7480571	.43413	0	1		
Yes	154,408	.2519429	.43413	0	1		
Province							
KP	154,408	.2078066	.4057389	0	1	.143643	.2294167
Punjab	154,408	.440709	.4964737	0	1	.595008	.3887417
Sindh	154,408	.2345863	.4237413	0	1	.1959025	.2476148
Balochistan	154,408	.1168981	.3212999	0	1	.0654465	.1342268
Region							
Rural	154,408	.7497733	.4331449	0	1	.8824482	.7050889
Urban	154,408	.2502267	.4331449	0	1	.1175518	.2949111
Marital status:							
Never married	154,408	.1706842	.376234	0	1	.188088	.1648226

Currently married	154,408	.755071	.4300465	0	1	.7617089	.7528354
Formerly married	154,408	.0742449	.2621698	0	1	.0502031	.082342
Age	154,408	35.81987	14.84706	15	99	33.73922	36.52063
Education							
No formal education	154,408	.6451285	.4784759	0	1	.6778829	.6340969
Primary	154,408	.13294	.339511	0	1	.1191713	.1375773
Middle	154,408	.0665639	.249266	0	1	.0456275	.0736152
Secondary	154,408	.1093985	.3121395	0	1	.0726955	.1217599
Higher	154,408	.0459691	.2094188	0	1	.0846229	.0329507
Job training							
No training	154,408	.9030491	.2958919	0	1	.84736	.9218049
On job training	154,408	.0914396	.2882341	0	1	.1374737	.0759354
Off job training	154,408	.0055114	.074034	0	1	.0151663	.0022596
Migrant							
Yes	154,408	.1138801	.3176666	0	1	.1089404	.1155438
No	154,408	.8861199	.3176666	0	1	.8910596	.8844562
Disability							
No	154,408	.9030102	.2959448	0	1	.9515706	.8866552
Yes	154,408	.0969898	.2959448	0	1	.0484294	.1133448

4.3 Bivariate analysis

In this study, the majority of the variables are categorical in nature. Therefore, conducting cross-tabulation analysis, accompanied by a chi-squared test, would be particularly valuable in gaining deeper insights into the categorical dependent variable, which in this case is labour participation. The bivariate analysis examines the relationship between labour force participation and covariates, using the Chi-squared test to assess statistical significance.

For the province, the results show that labour force participation varies significantly across provinces, with a Pearson Chi-squared value of 5,300 and a p-value of 0.000, indicating a strong association. In Khyber Pakhtunkhwa (KP), 17.42% of individuals participate in the labour force, compared to 34.02% in Punjab, 21.04% in Sindh, and 14.11% in Balochistan. Punjab shows the highest labour force participation, while Balochistan has the lowest. Non-participation rates are consistently higher

across all provinces, with Balochistan having the highest non-participation rate (85.89%).

For the region, the analysis reveals a substantial difference in labour force participation between rural and urban areas, with a Pearson Chi-squared value of 4,900 and a p-value of 0.000. In rural areas, 29.65% of individuals participate in the labour force, compared to only 11.84% in urban areas. Conversely, non-participation is significantly higher in urban areas (88.16%) than in rural areas (70.35%). Overall, both province and region exhibit statistically significant associations with labour force participation, suggesting that geographic factors play an important role in determining labour market engagement.

Marital status shows a significant association with labour participation, as indicated by the chi-squared test (Pearson $\chi^2(2) = 500.1798$, $Pr = 0.000$). Among different marital status groups, never married individuals have the highest labour participation rate at 27.76%, followed by currently

married individuals at 25.42%. Formerly married individuals exhibit the lowest participation rate at 17.04%. The significant p-value confirms that marital status plays a key role in influencing labour force participation.

Education level is also strongly associated with labour participation, as evidenced by the chi-squared test (Pearson $\chi^2(4) = 2800$, Pr = 0.000). Interestingly, individuals with no formal education show a relatively high participation rate of 26.47%, while those with primary, middle, and secondary education have progressively lower participation rates (22.58%, 17.27%, and 16.74%, respectively). However, labour participation dramatically increases among individuals with higher education, with 46.38% participating in the labour force. The highly significant p-value underscores the critical role of education in determining labour force participation.

The bivariate analysis examines the relationship between labour participation and variables such as job training, migrant status, and disability, with significant associations identified through chi-squared tests. Job training emerges as a critical

factor, as individuals with no training have a 23.64% labour participation rate, those with on-the-job training have a higher rate of 37.88%, and those with off-the-job training exhibit the highest participation at 69.33%. The chi-squared test (Pearson $\chi^2(2) = 2300$, Pr = 0.000) confirms the strong association between training and workforce engagement.

Migrant status also shows a statistically significant relationship (Pearson $\chi^2(1) = 12.5747$, Pr = 0.000), with migrants participating at a slightly lower rate (24.10%) compared to non-migrants (25.33%). Disability is a significant barrier to labour participation, as individuals without disabilities have a much higher participation rate (26.55%) compared to those with disabilities (12.58%), supported by the chi-squared test (Pearson $\chi^2(1) = 1400$, Pr = 0.000). Overall, the analysis highlights the importance of job training and the need for targeted interventions to support migrants and individuals with disabilities in improving labour force participation.

Table 3. Bivariate analysis

Variables	Outcome	Participate in labour		Chi-squared
		Yes	No	
<i>Province</i>	KP	17.42	82.58	Pearson $\chi^2(3) = 5.3e+03$ Pr = 0.000
	Punjab	34.02	65.98	
	Sindh	21.04	78.96	
	Balochistan	14.11	85.89	
<i>Region</i>	Rural	29.65	70.35	Pearson $\chi^2(1) = 4.9e+03$ Pr = 0.000
	Urban	11.84	88.16	
<i>Marital status:</i>	Never married	27.76	72.24	Pearson $\chi^2(2) = 500.1798$ Pr = 0.000
	Currently married	25.42	74.58	
	Formerly married	17.04	82.96	
<i>Education</i>	No formal education	26.47	73.53	Pearson $\chi^2(4) = 2.8e+03$ Pr = 0.000
	Primary	22.58	77.42	
	Middle	17.27	82.73	
	Secondary	16.74	83.26	
	Higher	46.38	53.62	
<i>Job training</i>	No training	23.64	76.36	Pearson $\chi^2(2) = 2.3e+03$ Pr = 0.000
	On job training	37.88	62.12	
	Off job training	69.33	30.67	
<i>Migrant</i>	Yes	24.10	75.90	Pearson $\chi^2(1) = 12.5747$ Pr = 0.000
	No	25.33	74.67	
<i>Disability</i>	No	26.55	73.45	Pearson $\chi^2(1) = 1.4e+03$

	Yes	12.58	87.42	Pr = 0.000
--	-----	-------	-------	------------

5. Results and Discussion

The logistic regression results in Table 4 and Figure 1 provide insights into the likelihood of women participating in the labour force across provinces compared to the reference category, Khyber Pakhtunkhwa (KPK). In Punjab, the odds of women participating in the labour force are significantly higher, with women being 184.4% more likely in Model 1, 223.7% more likely in Model 2, and 230.3% more likely in Model 3 compared to KPK. Similarly, women in Sindh are also more likely to participate in the labour force, with odds 74.7% higher in Model 1, 83.1% higher in Model 2, and 98.0% higher in Model 3 compared to KPK. In contrast, women in Balochistan have lower odds of labour force participation than those in KPK, with a reduction of 18.2% in Model 1, 21.8% in Model 2, and 18.8% in Model 3. These findings highlight significant regional variations, with Punjab and Sindh exhibiting higher labour participation rates for women, while Balochistan lags behind compared to the base category of KPK.

The logistic regression results reveal that women in urban areas are significantly less likely to participate in the labour force compared to women in rural areas. In Model 1, the odds ratio of 0.283 indicates that urban women are 71.7% less likely to participate in the labour force. This likelihood decreases further in Model 2, where urban women

are 73.7% less likely to participate, with an odds ratio of 0.263. In Model 3, the odds ratio is 0.265, showing that urban women are 73.5% less likely to engage in the labour force compared to rural women. These consistent findings across all models highlight a significant disadvantage for women in urban areas in terms of labour force participation relative to their rural counterparts.

The logistic regression results highlight the impact of marital status on women's likelihood of participating in the labour force, with 'never married' women serving as the reference category. Currently married women are significantly less likely to participate in the labour force, with an odds ratio of 0.645 in Model 2, indicating they are 35.5% less likely to participate compared to never-married women. This likelihood decreases slightly in Model 3, where the odds ratio is 0.638, showing they are 36.2% less likely to participate. Similarly, formerly married women are less likely to participate in the labour force compared to never-married women, but the difference is less pronounced. In Model 2, the odds ratio of 0.757 indicates that formerly married women are 24.3% less likely to participate, while in Model 3, with an odds ratio of 0.764, they are 23.6% less likely. These findings underscore the significant role of marital status in shaping women's labour force participation, with currently married women facing the greatest disadvantage.

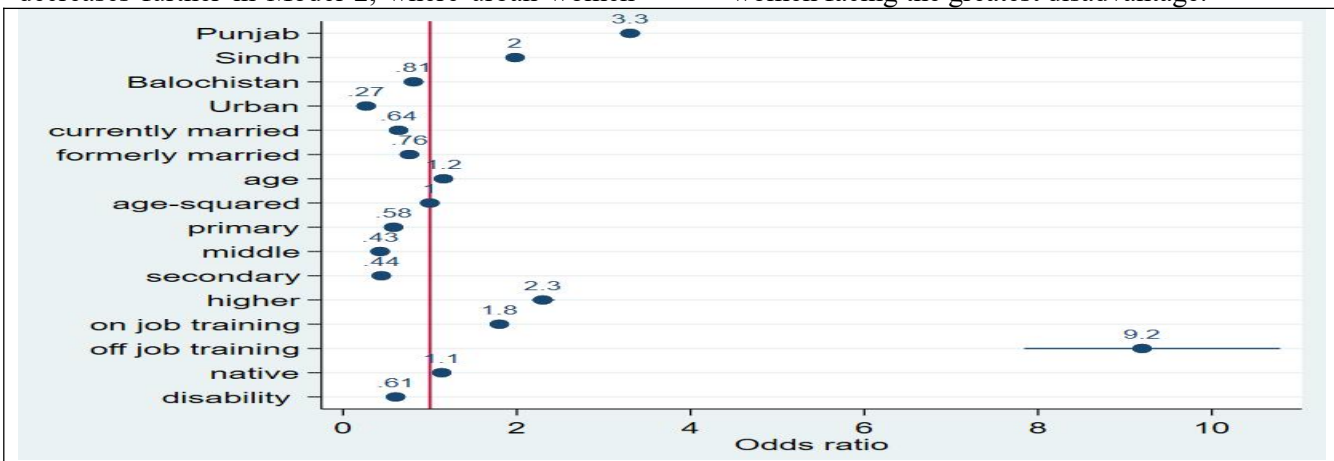


Figure 1. Coefficient plot of odds ratios

The logistic regression results reveal the relationship between age and women's labour force participation. The odds ratio for the variable 'Age' is 1.169 in Model 2, indicating that with each

additional year of age, women are 16.9% more likely to participate in the labour force. In Model 3, the odds ratio is slightly lower at 1.156, suggesting a 15.6% increase in the likelihood of participation

for each additional year. However, the inclusion of 'Age-squared' with an odds ratio of 0.998 in both models shows that the positive effect of age diminishes over time. Specifically, the odds of labour force participation decrease by 0.2% for each additional year as age increases further. These findings suggest that while labour force participation initially rises with age, the rate of increase slows down as women grow older.

The logistic regression results highlight the impact of education levels on women's labour force participation, with 'no formal education' as the reference category. Women with primary education are less likely to participate in the labour force, being 36.8% less likely in Model 2 and 41.9% less likely in Model 3 compared to women with no formal education. Similarly, women with middle education are 52.6% less likely to participate in Model 2 and 57.4% less likely in Model 3. For women with secondary education, the likelihood of participation is reduced by 51.2% in Model 2 and 55.9% in Model 3. In contrast, women with higher education are significantly more likely to participate in the labour force, with 136.2% higher odds in Model 2 and 129.9% higher odds in Model 3 compared to women with no formal education. These results suggest that while higher education substantially increases women's labour force participation, lower levels of education (primary, middle, and secondary) do not translate into increased participation, possibly reflecting the limited opportunities available to women with less formal education.

The logistic regression results highlight the significant impact of job training on women's labour force participation, with 'no job training' as

the reference category. Women who have received on-the-job training are 80.0% more likely to participate in the labour force compared to those without any training. The effect is even more pronounced for women with off-the-job training, who are 819.7% more likely to participate in the labour force compared to their untrained counterparts. These findings underscore the critical role of job training, particularly off-the-job training, in enhancing women's likelihood of labour market engagement, suggesting that skill development initiatives can be instrumental in promoting women's economic participation.

The logistic regression results indicate the effect of being native (compared to being a migrant) on women's likelihood of participating in the labour force. The odds ratio for the variable 'Native' in Model 3 is 1.135, meaning that native women are 13.5% more likely to participate in the labour force compared to migrant women. This suggests that being native positively influences women's likelihood of labour market engagement, possibly due to factors such as greater social support, familiarity with local labour markets, or fewer relocation-related barriers.

The logistic regression results indicate the impact of having a disability on women's likelihood of participating in the labour force. The odds ratio for the variable "Disability" in Model 3 is 0.606, meaning that women with disabilities are 39.4% less likely to participate in the labour force compared to women without disabilities. This substantial reduction highlights the significant challenges that women with disabilities face in accessing labour market opportunities, likely due to physical, social, or systemic barriers.

Table 4. Estimates of the Logistic regression model – odds ratios

Variables	Model 1	Model 2	Model 3
Province: KPK (base)			
Province: Punjab	2.844*** (0.0485)	3.237*** (0.0576)	3.303*** (0.0596)
Province: Sindh	1.747*** (0.0352)	1.831*** (0.0377)	1.980*** (0.0414)
Province: Balochistan	0.818*** (0.0214)	0.782*** (0.0207)	0.812*** (0.0217)
Urban	0.283*** (0.00495)	0.263*** (0.00502)	0.265*** (0.00511)
Marital status: Never married (base)			
Marital status: Currently married		0.645*** (0.0137)	0.638*** (0.0138)
Marital status: Formerly married		0.757*** (0.0278)	0.764*** (0.0283)
Age		1.169*** (0.00374)	1.156*** (0.00376)
Age-squared		0.998*** (4.01e-05)	0.998*** (4.12e-05)
Education: No formal education (base)			
Education: Primary		0.632*** (0.0124)	0.581*** (0.0116)
Education: Middle		0.474*** (0.0137)	0.426*** (0.0126)
Education: Secondary		0.488*** (0.0116)	0.441*** (0.0107)
Education: Higher		2.362*** (0.0676)	2.299*** (0.0663)
No job training (base)			
On job training			1.800*** (0.0368)
Off job training			9.197*** (0.748)
Native			1.135*** (0.0235)
Disability			0.606*** (0.0179)
Constant	0.233*** (0.00345)	0.0319*** (0.00166)	0.0306*** (0.00175)
Observations	154,408	154,408	154,408

seEform in parentheses, *** p<0.01, ** p<0.05, * p<0.1

6. Conclusion

This study seeks to address a significant gap in the literature by empirically examining the interplay of socioeconomic, demographic, regional, and personal traits on women's labour participation. The logistic regression results reveal significant factors influencing women's labour force participation. Provincial differences show women in Punjab and Sindh are more likely to participate, while those in Balochistan are less likely compared to KPK. Urban women are less likely to participate than rural women. Marital status significantly affects participation, with currently married women 36.2% and formerly married women 23.6% less likely to participate compared to never-married women. Age positively impacts participation initially, with a 15.6% increase per year, but this effect diminishes with age. Education shows contrasting effects: higher education increases participation, while primary, middle, and secondary education reduce participation. Job training is a strong predictor, with off-the-job training increasing participation. Native women are 13.5% more likely to participate than migrants, while women with disabilities are 39.4% less likely to engage in the labour force. These findings highlight critical demographic and socio-economic disparities.

To enhance women's labour force participation, targeted policy measures are essential. First, invest in skill development programs, particularly off-the-job training, to improve employability. Expand access to higher education for women, especially in underserved provinces like Balochistan. Develop inclusive work policies and incentives to support married women, such as flexible work arrangements and childcare services. Address urban employment barriers by creating job opportunities and reducing structural constraints. Provide tailored support for women with disabilities, including workplace accommodations and accessible training programs. Finally, strengthen social support systems for migrants to integrate them into local labour markets effectively. These measures can bridge demographic and socioeconomic gaps.

REFERENCE

- Afridi, F., Dinkelman, T., & Mahajan, K. (2018). Why are fewer married women joining the work force in rural India? A decomposition analysis over two decades. *Journal of Population Economics*, 31, 783-818.
- Becker, G.S. (1965). A Theory of the allocation of Time. *The Economic Journal*, 75(1), 299-312.
- Che, G. N., & Sundjo, F. (2018). Determinants of female labour force participation in Cameroon. *International Journal of Applied Economics, Finance and Accounting*, 3(2), 88-103.
- Doss, C. (2013). Intrahousehold bargaining and resource allocation in developing countries. *The World Bank Research Observer*, 28(1), 52-78.
- Eckstein, Z. and Lipshitz, J.G. (2011), "Dynamic female labor supply", *Econometrica*, Vol. 79 No. 6, pp. 1675-1726.
- Ejaz, M. (2007). Determinants of female labor force participation in Pakistan: An empirical analysis of PSLM (2004-05) micro data. *The Lahore Journal of Economics*, 12(1), 203-235.
- Ejaz, M. (2011). The determinants of female labor force participation in Pakistan: An instrumental variable approach. Centre for Research in Economics and Business, Lahore School of Economics.
- Faridi, M. Z., Chaudhry, I. S., & Anwar, M. (2009). The socio-economic and demographic determinants of women work participation in Pakistan: evidence from Bahawalpur District. *Journal of South Asian Studies*, 24(2), 353-369.
- Govindapuram, S., Bhupatiraju, S., & Sirohi, R. A. (2023). Determinants of women's financial inclusion: evidence from India. *Annals of Public and Cooperative Economics*, 94(1), 131-158.
- Greene, W. H. (2003). *Econometric analysis*. Pearson Education India.

- Gujarati, D.N., 1995. *Basic Econometrics*, 3rd, edition. ed. Mc Graw-Hill, New York.
- Kabeer, N. (2021). Gender equality, inclusive growth, and labour markets. In *Women's Economic Empowerment* (pp. 13-48). Routledge.
- Mincer, J., & Jovanovic, B. (1981). Labor mobility and wages. In *Studies in labor markets* (pp. 21-64). University of Chicago Press.
- Mujahid, N. (2014). Determinants of female labor force participation: A micro analysis of Pakistan. *International Journal of Economics and Empirical Research*, 2(5), 211-220
- Ntuli, Miracle (2007) : Determinants of South African women's labour force participation, 1995 - 2004, IZA Discussion Papers, No. 3119.
- Sauré, P., & Zoabi, H. (2014). International trade, the gender wage gap and female labor force participation. *Journal of Development Economics*, 111, 17-33.
- Schultz, T. W. (1973). The value of children: an economic perspective. *Journal of Political Economy*, 81(2, Part 2), S2-S13.
- Singh, A. (2022). Women labour force in Haryana and its determinants. *International Journal of Creative Research Thoughts*, 10(1), 102-111.
- Shair, W., Nawaz, M., & Asif, M. (2023a). Impact of Internal Remittances on Labour Participation and Employment Choice in Pakistan. *Bulletin of Business and Economics (BBE)*, 12(3), 192-201.
- Shair, W., Majeed, M. T., & Ali, A. (2023b). Labor participation decision and preferences towards different employment status in response to remittances in Pakistan. *Iranian Economic Review*, 27(1), 135-152.
- Shair, W., Anwar, M., Hussain, S., & Kubra, N. (2024). The Differential Effect of Internal and External Remittances on Labor Participation and Employment Choices in Pakistan. *SAGE Open*, 14(3), 21582440241265879.