Rajshahi University journal of social science and business studies **ISSN 2309-0944 (Print)**
Vol. 29 (2021), pp 37-45 **ISSN 2408-8811 (Online)**
DOI: https://doi.org/10.64102/rujssbs.0451

Determinants of Earnings among Male and Female Employees in Rajshahi District: A Gender-Based Study

Muhammad Rabiul Islam Liton[1]*, Md. Shamduddin Sarker[2]

Abstract

Earnings inequality between male and female employees is common problem found in the developing countries. Therefore, investigating the determinants of earnings is important for identifying the factors that contribute to gender disparities in the labor market. This study investigates the socio-economic and demographic factors that affect earnings among male and female employees in Rajshahi district of Bangladesh with additional focus on gender pay gap. To pursue the study, required data have been from 70 service holders reciding in Kazla and Talaimari areas under Motihar Thana of Rajshahi district. The modified Mincerian earnings function model has been employed in this study to identify the factors affecting earnings of the employees. Estimated results indicate significant earnings gaps, between male and female, in the study area. The regression revealed that earnings of the respondents depend on education level and experience, consistent with the Mincerian proposition. The negative significant coefficient of gender dummy appeared for the female indicate that women receive significantly lower earning than male controlling for other factors. Separate regressions for male and female employees gives the insights that in the Mincerian framework, earnings with respect to education of the males additionally is affected by family status and duration of working. These findings indicate the existence of gender-based earnings disparities and emphasizes on targeted policies to promote equality in the labor market.

Keywords: Inequalities; Gender; Determinants of earnings; Service holders; Mincerian model, Bangladesh.

1. Introduction

Gender inequalities has become a common phenomenon everywhere in most of the developing countries. In the case of income earnings, available studies report that in the developing and least developed countries the degree and prevalence of inequality a matter of concern, and even such inequalities happen in the developed countries as well (Miftah 2022). It is also observed that in spite of various initiatives from the government and non-government institutions, the issue still remains beyond control. In the Organization for Economic Co-operation and Development (OECD) countries, for example, women still earn 84% of men's hourly earnings on average (OECD 2002). In the United States (US), the gap narrowed in the 1980s after a stable period following the 1960s (Blau & Kahn, 2000), but wage convergence then slowed with the gap remaining almost constant since the early 1990s (Blau & Kahn, 2006; Blau & Kahn, 2008). Currently

[1] Professor, Department of Economics, Mawlana Bhashani Science and Technology University, Tangail, Bangladesh; E-mail: rabiul388@gmail.com * Corresponding Author

[2] Lecturer, Department of Economics, Rabindra University Bangladesh, Shahjadpur, Sirajganj 6770, Bangladesh; E-mail: sarker.econ@rub.ac.bd

a typical American woman earns 82 cents for every dollar earned by men (Kochhar, 2023). Almost similar findings are presented for other advanced economies, such as Sweden (Edin & Richardson, 2002) and Denmark (Datta *et al.,,* 2006).

Women in Bangladesh, however, are generally depended on men in every sphere of their life, although the constitution of Bangladesh has declared equality of rights (Hossen, 2020). In the home they become subject to biasness from very early of their life. Due to male dependence in the patriarchal system, majority of Bangladeshi families take low care for female child compare to male child and provide lower facilities to female for flourishing themselves. Even women were restricted to move freely for education, employment, business or social activities to various degrees - much depending on the traditions of individual families. Cultural restrictions gears up the problem and females are often discouraged from participating in public life (Asaduzzaman *et al.,* 2015). Since the mid-1980s, however, due to increased poverty and an increased demand for labor, female employment has risen considerably in both government and non-governmental jobs. However, women are found to have paid lower remuneration from work compared to their male counterparts. This gender pay gap is usually a result of breaking the principle of equal pay for work of equal value, which is under the presumption that the same work operated by different genders requires the same level of responsibility, expertise, experience and readiness in the intellectual and physical sense (Dakic & Savic, 2017). In Bangladesh, due to low level of education, majority of women employed in low skilled jobs in the urban sectors, though in very recent years due to various government policies women participation in case of high skilled and entrepreneurial jobs are increasing (Hossain & Tisdell, 2003). Along with low opportunity in employment, females suffer due to discrepancy in the workplace- which at the end are reflected by lower payment compared to the mail counterparts (Islam, 2016; Ahmed and Maitra 2011)). According to BBS (2018) women earn almost 10% less on average than men in Bangladesh. Thus the study aims to contribute to reflect such earning inequalities, and therefore, tries to identify the influential factors causing the earning gaps and the insights for policy implications.

The organization of the study is as follows: After introducing the issue in Section 1, the study discusses major findings of previous studies in Section 2. Section 3 explains the methodological part. Results are discussed in Section 4 whilst Section 5 summarizes the whole study.

2. Literature Review

There are several studies that devoted on the gender based earnings gap in the case of different contexts. Most of the researchers found that various socioeconomic and demographic characteristics of employed population affect their income earnings. While there are many factors that can determine the level of income of the employees in the formal sectors, it is generally found that years of schooling, skill, experience and other demographic variables including family background and family status are important factors and these variables have significant impact on earnings (Kashif & Raheel, 2017). Wang and Shen (2017) observed in their study that factors such as sex, age, education and marriage that significantly affect personal income. Chaudhury *et al.,* (2010) explored that besides age and education, health of the employees has significant influence on female earnings.

Determinants of wage are different for different country contexts as well. In case of earnings in financial institutions in Lahore in Pakistan employees' earnings are determined by education, experience, computer literacy, gender, nature of job, family background and family status (Afzal *et al.,* 2011). In case of Macedonia it is found that the earnings are not uniform across the population but they vary due to variation in a number of socio-economic and demographic characteristics. Sex, education, experience, marital status, place of living, type of contract, and working hours are the major determinants of earnings of individuals (Nokoloski *et al.,* 2018). In Tehran city of Iran age, gender, residence, wealth, and private investment affect income level in negative direction where income level is affected by age squared and occupation variable in positive direction (Mohammadi *et al.,* 2015). In case of Malaysia, earnings of individuals are explained by age, marital status, gender, ethnicity, occupational types and geographical location at a certain level of educational qualification (Arshad and Ghani 2014).

Women are not enjoying same rights in education, employment and earnings in Bangladesh. Rather early researchers have found gender wage gap in their study and observed that males are earning more than female in labor market of Bangladesh (Anjum, 2016). Wage gap is also found between public and private sectors employees and between employees with diploma and general education (Amara *et al.,* 2017). Likewise, Khan *et al.,* (2012); Siddiqui and Siddiqui (1998); Awan and Hussain (2007) found gender disparities against female employees in Pakistan.

Asaduzzaman *et al.,* (2015) found that women in the country have little rights in family income though they have to share all burdens of productive and household works. Generally, females were not allowed to work outside of house, therefore, their participation in cleaning house, child care, cooking and preparation of meal remain high; and lowest in case of tree plantation, dairy farming, poultry rearing etc. Thus, the patriarchal social system could exploit female easily. Further, women in Bangladesh face inequalities in case of getting education and health facilities also. However, participation of women in various jobs increased in recent years albeit most of them engaged in low skilled works and hence earn less than male workers. Hossain and Tisdell, (2003) and Islam (2016) found coexistence and intersections of multiple gender disparities in workplace especially in readymade garments industry. Capsos, (2008) tried to identify the determinants of earnings of non-agricultural workers in Bangladesh. By using Mincerian regression model and Blinder-Oaxaca wage decomposition model the study revealed that women workers in Bangladesh earn on average 21% less than men workers. Thus, previous studies focusing on the issue found gender inequalities in the earnings. Therefore, it becomes essential to identify the factors that might be helpful in increasing earnings of women and hence in reducing such earning inequalities.

3. Methodology

3.1 Data Collection

The study is mainly based on primary data although some secondary data are also used. The study is purposively conducted in two areas- Kazla and Talaimari, under Motihar Thana of Rajshahi district. These two areas are characterized by typical urban settings where households of various occupations are living. However, in selecting the respondents random sampling technique is used. In selecting the sample respondents only those households are included in the sampling frame whose members, either male or female, are engaged in formal jobs. Finally, the study has collected required data from 70 service holders, 35 male and 35 women, who are employed in different

government and non-government jobs. The data were collected through face-to face interview using a semi-structured questionnaire. Secondary data cited in this study are collected from the reports of Bangladesh Bureau of Statistics (BBS), Ministry of Education, and Labor Force Survey and published paper and articles.

3.2 Empirical Model

For analysis, the study has used modified Mincerian earnings model (Afzal, 2011) that can be explained as:

$$\ln Y = \alpha_0 + \sum_{i=1}^{k} \alpha_i X_i + \varepsilon_i$$

Where, ln Y is natural logarithm of earnings of the respondents, X_i refers to a set of k traditional and non-traditional determinants of earnings and ε_i= error term.

More specific form of the model used in the study is:

$$\ln EARN = \alpha_0 + \beta_1 EDU + \beta_1 EDU + \beta_2 TRAIN + \beta_3 EXP + \beta_4 EXP^2 + \beta_5 F.ST. + \beta_6 W.H. + \beta_5 D_1 + \beta_8 D_2 + \beta_9 D_3 + \varepsilon$$

Where, ln EARN is natural logarithm of earnings of the respondents, EDU is educational qualification calculated in terms of years, TRAIN refers to training received by respondent calculated in terms of month, EXP is job experience of the respondents calculated in terms of years, EXP^2 is squared values of job experience, F.ST. is family status which is calculated by average parents' years of schooling, W.H. indicates working hours per day, D_1 is a dummy variable for occupational category (1=Public, 0=Otherwise), D_2 is another dummy variable of having computer skill (1=Yes, 0=Otherwise), D_3 is a dummy variable for gender (Female= 1, and others =0), α_i are Coefficients to be estimated and ε is error term.

4. Discussion of Results

4.1 Descriptive Statistics

It is observed from Table 1 that there exists a significant variation in the information of the respondents. It states that average monthly income is very low compared to average educational qualification, training and experience. On average, person having more than 14 years of schooling and 10 years of experience earns less than Tk.30000 per month.

Table 1: Descriptive Statistics of All Respondents

Variables	Mean	Std. Deviation	Minimum	Maximum
EARN (Personal)	29154.23	23185.78	5000.00	96000.00
EARN (Family)	55357.00	33015	7500.00	150000.00
F. Size	4.37	1.19	2.00	7.00
AGE	35.95	11.47	18.0	60.0
EDU	14.29	2.88	5.0	18.0
TRAIN	5.93	5.62	0.0	25.0
EXP	10.66	9.28	0.5	35.0
F. ST.	7.58	3.97	0.0	17.0
W.H.	8.36	2.03	6.0	16.0

Source: Field Survey, 2023

Average family income is quite good though many families earn less than Tk.10000 per month which is not sufficient for maintaining a family in a city area. Generally, parents do not have high educational qualification most of the cases they are either illiterate or having primary level of education. It is also showed that in most of the cases low income employees work more time that becomes average working hour more than 8 hours a day.

Table 2: Descriptive Statistics by Sex

	Mean (Male)	Std. Dev.	Mean (Female)	Std. Dev.	Mean Difference	t-value	p-value
EARN (Per.)	33885.29	22081.38	22720.00	23534.00	11165.29*	1.867	0.067
EARN (Family)	50655.88	28517.00	61752.00	37975.00	11096.12	-1.283	0.205
AGE	37.71	11.16	33.56	11.68	4.15	1.383	0.172
EDU	14.77	2.81	13.64	2.91	1.13	1.496	0.140
TRAIN	7.06	6.31	4.4	4.16	2.66**	1.833	0.072
EXP	12.34	9.37	8.38	8.83	3.96	1.644	0.106
F. ST.	7.88	3.70	7.16	4.36	0.72	0.687	0.495
W.H.	8.56	2.13	8.1	1.82	0.46	0.867	0.378

Source: Field Survey, 2023

It is observed from Table 2 that female service holders earn significantly less than male counterparts. It is also revealed that earning of female service holders have large contribution in their family income and hence, livelihood of the family members.

4.2 Regression Results

The results are not identical for all respondents rather different in case of male and female respondents. Therefore, the study discusses regression results in three phases. In first phase the study considers all respondents where in second and third phase only male and only female respondents, respectively.

4.2.1 Regression Results for All Respondents

It is observed from Table 3 that earning of the service holders in the study area is mainly depends on education level and gender of the respondents; and category of the jobs they hold as well though experience and family status of the respondents also have significant influences on earnings. Generally, higher educated persons get better jobs, hence, get more payment than less educated persons.

Table 3: Regression Results for All Respondents

Determinants	Coefficient	Std. error	t-value	p-value
EDU	0.126***	0.023	5.49	0.000
TRAIN	0.003	0.012	0.21	0.831
EXP	0.051**	0.021	2.38	0.021
EXP^2	0.000	0.001	-0.73	0.471
F.ST.	0.046***	0.016	2.78	0.008
W.H.	0.044	0.029	1.51	0.137
D_1	0.446***	0.142	3.15	0.003
D_2	-0.088	0.150	-0.59	0.559

D_3	-0.242*	0.120	-2.01	0.050
Constant	7.025	0.424	16.58	0.000

N: 59, R-squared: 0.790, Adj. R-squared: 0.752 , VIF: 3.91, chi2(1) = 0.70 Prob > chi2 = 0.4017
Note: *** for 1%, **for 5% and * for 10% significance level

The results revealed that, holding other things constant, one-year schooling may increase the earnings by 0.126% and under same condition, one person change from non-government job to government job may increases the average earnings by 0.446%. Therefore, rate of return to education and type of job is 12.6% and 44.6%, respectively. Due to high skill and more managerial power, experienced persons earn more than less experienced persons and holding other factor unchanged, one-year job experience may increase earnings by 0.051%. The results also revealed family status (having rate of return 4.6%) as an important determinant due to impact on educational qualification of the respondents. Finally, negative sing of dummy variable D_3 states that female service holders in the study area earns less than male service holders and if 1 male service holder is replaced by 1 female service holders then average earnings will reduce 0.242%. The results of VIF and Breusch-Pagan test indicates that the analysis is free from multicollinearity and heteroscedasticity problems.

4.2.2 Regression Results for Male Respondents

Table 4 revealed that education and occupation are the main determinants of the earnings of male service holder in the study area though family status and working hours also have significant impact on earnings.

Table 4: Regression Results for Male Respondents

Determinants	Coefficient	Std. error	t-value	p-value
EDU	0.129***	0.028	4.61	0.000
TRAIN	0.010	0.013	0.76	0.453
EXP	0.026	0.030	0.87	0.394
EXP^2	0.000	0.001	0.13	0.897
F.ST.	0.065***	0.023	2.87	0.008
W.H.	0.063*	0.036	1.76	0.090
D_1	0.302*	0.168	1.80	0.085
D_2	-0.314	0.245	-1.28	0.213
Constant	7.009***	0.521	13.44	0.000

N: 34, R-squared:0.768, Adj. R-squared: 0.694, VIF: 5.22, chi2(1) = 1.83 Prob > chi2 = 0.1763
Note: *** for 1%, **for 5% and * for 10% significance level

Regression results found that one-year increase in education, remaining other factors unchanged, may contributed in 0.129% increase in average earnings. In contrast, coefficient of dummy variable D_1 is 0.302 that indicates that if all other things remain same then replacing 1 male person from government job to non-government job may increase average earnings by 0.302%. Coefficient value of variable Family Status indicates that 1 years increase in parent's years of schooling may increase male's

earnings by 0.065%. Similarly, 1 hours increase in working hours may increase male service holder's income by 0.063%. The results of VIF and Breusch-Pagan test indicates that the analysis is free from multicollinearity and heteroscedasticity problems.

4.2.3 Regression Results for Female Respondents

It is observed from Table 5 that educational qualification, experience of the respondents and category of the jobs are the main determinants of earnings of female service holders in the study area. The result revealed that 1 year of schooling, remaining other things constant, may increase female's income by 0.130%.

Table 5: Regression Results for Female Respondents

Determinants	Coefficient	Std. error	t-value	p-value
EDU	0.130***	0.042	3.13	0.007
TRAIN	0.010	0.031	0.31	0.764
EXP	0.082**	0.037	2.21	0.042
EXP^2	-0.001	0.001	-1.05	0.308
F.ST.	0.024	0.026	0.94	0.364
W.H.	0.019	0.055	0.35	0.733
D_1	0.586**	0.270	2.17	0.045
D_2	0.065	0.213	0.30	0.765
Constant	6.753***	0.695	9.72	0.000

N: 25, R-squared: 0.824, Adj. R-squared: 0.736, VIF: 4.19, chi2(1) = 0.60, Prob > chi2 = 0.4398

Note: *** for 1%, **for 5% and * for 10% significance level.

In the study area females face wage discrimination and due to more government control over public jobs, discrimination is very low in these jobs compare to private jobs. That's why job category is an important determinant of earnings of female service holders having highest rate of return. It reveals that replacing 1 female service holders from non-government job to government job, remaining other things unchanged, may increase their average income by 0.587%. In addition, one-year experience in case of female respondents may increases earnings by 0.082% in the study area. The results of VIF and Breusch-Pagan test indicates that the analysis is free from multicollinearity and heteroscedasticity problems.

5. Conclusion

This study highlights the existence of significant disparities in earnings between male and female employees in Rajshahi district, Bangladesh. By applying the modified Mincerian earnings function, the analysis shows that education, work experience, occupational category, working hours, and family background play an important role in determining earnings. However, even after considering for these factors, women continue to earn significantly less than men, indicating the persistence of gender-specific barriers in the labor market. The separate regression results for male and female further suggest that family background and working duration have a stronger influence on male employees' earnings than on females. These findings underscore the need for policies that promote equal opportunities, reduce gender discrimination, and enhance women's

access to education, training, and higher-quality employment. Addressing these inequalities is essential for ensuring inclusive development and enhancing well-being of the workforce in Bangladesh.

References

Afzal, M., 2011. Microeconometric analysis of private returns to education and determinants of earnings, *Pakistan Economic and Social Review*, Vol. 49, Issue 1, pp 39- 68.

Ahmed, S. & Mitra, P. 2015. A Distributional Analysis of the Gender Wage Gap in Bangladesh, *Journal of Development Studies*, Vol. 15, Issue 11, pp 1444-1458.

Amara, M., Khalluli, W. & Zidi, F. 2017. Public-private wage differentials in Tunisia: Consistency and decomposition, *Regional Economic Cooperation, Peace and Development*, Dead Sea, Jordan (TBC).

Anjum, N. 2016. The Gender Wage Gap in the Public and Private Sectors in Bangladesh, An unpublished thesis, *University of Canberra*, Australia.

Arshad, M. N. M. & Ghani, G.M. 2014. Returns to Education and Wage Differentials in Malaysia, *Proceedings of the Australian Academy of Business and Social Sciences Conference 2014*.

Asaduzzaman, M., Kabir, M.S. and Ali, R.N., 2015. Gender Inequality, *Institute of Economic Sciences*, Belgrade, Serbia, JWE, No. 3-4, pp 54-64.

Available at: *https://core.ac.uk/download/pdf/44685679.pdf*

Awan, M.S. and Hussain, Z. 2007. Returns to Education and Gender Differentials in Wages in Pakistan, *The Lahore Journal of Economics*, Vol. 12, Issue 2 (Winter 2007) pp. 49-68

BBS 2018. *Labour Force Survey (2016-2017)*, Bangladesh Bureau of Statistics, Ministry of Planning, Bangladesh.

Blau and Kahn 2006. "The U.S. Gender Pay Gap in the 1990s: Slowing Convergence." *ILR Review*, Vol. 60, Issue1, pp 45–66.

Blau, F. D. and Kahn, L.M. 2008. Women's Work and Wages, *The New Palgrave Dictionary of Economics*, 2nd ed., edited by Steven N. Durlauf and Lawrence E. Blume, pp 762-772. London: Palgrave Macmillan.

Blau, F. D., and Kahn, M.L. 2000. Gender Differences in Pay. *Journal of Economic Perspectives,* Vol. 14, Issue 4, pp 75–99.

Capsos, S. 2008. The gender wage gap in Bangladesh, *ILO Asia-Pacific Working Paper Series,* Regional Office for Asia and the Pacific – Bangkok: ILO, 2008, No. 3, P. 29.

Chaudhry, I.S.; Faridi, M.Z. and Anjum, S. 2010. The Effects of Health and Education on Female Earnings: Empirical Evidence from District Vehari, *Pakistan Journal of Social Sciences (PJSS),* Vol. 30, No. 1, pp. 109-124

Dakic. S and Savic M. (2017). Application of the Mincer Earning Function in Analyzing Gender Pay Gap in Serbia. *Economics and Organization*. Vol. 14, No 2, 2017, pp. 155 - 162

Datta, G. N.; Oaxaca, R. and Smith, N. 2006. Swimming Upstream, Floating Downstream: Comparing Women's Relative Wage Progress in the United States and Denmark, *Industrial and Labor Relations Review*, Vol 59, Issue 2, pp 243–66

Edin, P. and Richardson, K. 2002. Swimming with the Tide: Solidary Wage Policy and the Gender Earnings Gap, *The Scandinavian Journal of Economics,* Vol. 104, Issue 1, pp 49–67.

Hossain, M. and Tisdell, C. 2003. Closing the Gender Gap in Bangladesh: Inequality in Education, Employment and Earnings, Working paper series, *School of Economics*, University of Queensland, 4072, Australia.

Hossen, M. S. 2020. Patriarchy Practice and Women's Subordination in the Society of Bangladesh: An Analytical Review, *Electronic Research Journal of Social Sciences and Humanities*, Vol. 2, Issue 3, pp 51-60.

Islam, S. 2016. Feminization of Employment and Gender Inequality of Bangladesh Labor Market: The Case of Garment Industries, *Developing Country Studies*, Vol.6, Issue 2, pp 157-168.

Kashif, M. and Raheel, M. 2017. Econometric Measurement of Earning Differentials for the Workforce Working in Technical Educational Institutes of Lahore, *International Journal of Scientific and Research Publications*, Vol. 7, Issue 10, pp 492-526.

Khan, T.; Mahtab, N. and Abrar-ul-Haq, M. 2012. Gender Disparity in Economic Returns to Higher Education: Evidence from Private Formal Sector of Bahawalpur (Pakistan), *Interdisciplinary Review of Economics and Management,* Vol. 2, Issue 1, pp 34-40

Kochhar, R. 2023. The Enduring Grip of the Gender Pay Gap, *Pew Research Center*, March 1, 2023. Available at: https://www.pewresearch.org/social-trends/2023/03/01/the-enduring-grip-of-the-gender-pay-gap/

Miftah, A. 2022, Gender discrimination in Bangladesh.

Available at: https://www.academia.edu/8760546/Gender_discrimination_in_Bangladesh

Mohammadi, H., Torabi, S. & Dogani, A. 2015. Application of Ordered Logit Model in Investigating the factors Affecting People's Income (A Case Study in Tehran City), *International Journal of Academic Research in Economics and Management Sciences*, Vol. 5, Issue 3, pp 2226-3624.

Nokoloski, D.; Angeleski, M. and Rocheska, S. 2018. Determinants of earnings in Macedonia: assessing the difference between low-paid and highly-paid employees, *Eastern Journal of European Studies*, Vol. 9, Issue 1, pp 111-131.

Organisation for Economic Co-operation and Development (OECD) 2002. Women at Work: Who Are They and How Are They Faring, *OECD Employment Outlook*, pp 61–125.

Siddiqui, R. & Siddiqui R. 1998. A Decomposition of Male-Female Earnings Differentials, *The Pakistan Development Review*, Vol. 37, Issue 4, pp 885-898.

Wang, L. and Shen, J. 2017. Examining the Factors Affecting Personal Income: An Empirical Study Based on Survey Data in Chinese Cities, *Front. Econ. China*, Vol. 12, Issue 4, pp 515–544.