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RESEARCH PAPER

Socio-Economic Life of Working Women at Traditional Brick Kiln Industry of North Sindh, Pakistan

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ABSTRACT

Objective of the research article is to assess social and economic conditions of women labour at kilns and point out their contributions to the profit at kilns of North Sindh, Pakistan. Purposive sample of 90 kilns non randomly selected is used and only three districts of North Sindh are chosen i.e. Khairpur, Sukkur, and Larkana. Women labour at kilns is required especially for certain jobs at kilns. They do not perform fire job (to burn bricks) at kilns. Their main job is to mould bricks. Research is quantitative. Duncan Index , wage gap is calculated for kilns. Model used is simple multiple linear regression model which tells about factors affecting availability of labour at kiln. Variables are average labour wage, working hours, *Peshgi* given, female labour quantity, total working days and annual accidents. On the average 8.5 more males are there per 1 woman working at kilns. There is 4 % loss, on average, if women labour at kiln is not employed. There is 18.5% wage gap for 23 kilns where women work. It means on average male labourers are paid 18.5% more than female labourers. Duncan Index of dissimilarity is 42.3% meaning that 42.3% fraction of women has to change occupation to be equal with males. Model is valid as two variables are Significant. Adjusted R^2 is 0.674 and Intercept tells that if all dependent variables are zero the kiln will attract only 1.7 labourers only. Female labour Quantity and total working days, both variables have significant impact on kiln's full labour Q. It is recommended that women participation at kilns be increased and their wage rate be equated with men labour at kilns and their social security be increased.

KEYWORDS Kiln Female Labour, Working Women, Duncan Index, Male Female Ratio, Red Brick, Kiln, North Sindh, *Peshgi* , Social Security

Introduction

Fastest urbanization has been seen in North Sindh recently. It is being changed from rural to urban centre. It was not possible without the boom in the red brick sector of North Sindh.

Usually the most significant cost for the larger kilns is not fuel but labour cost.

Kilns are labour intensive in nature. Labour is required in greater proportion as compared to capital.

There are 1500 kilns in Sindh and estimated number of workers is 100-125 per kiln (Federal Budget 2012)

Purposive sample of 90 kilns non randomly selected is used and only three districts of North Sindh are chosen i.e. Khairpur, Sukkur, and Larkana. North Sindh traditional kilns are divided into three categories by scholar based on production level, infrastructure, land area and annual operating time i.e. small, medium and large kilns. Production of average bricks is 230429, 2465477 and 7147059 bricks for small, medium and large kilns respectively. Net profit is 281808, 3647403 and 14908971 Rs for small, medium and large kilns calculated from average income statement of kilns.

Women labour at kilns is required especially for certain jobs at kilns. Women labour does not perform fire job at kilns. Their main job is to mould bricks.

If families reside at a kiln then there are children also present at kilns. They officially don't work at kiln, yet they *work* at kiln with many other workers without any pay.

Two types of labour work at kilns when it comes to wage, i.e. underpaid and unpaid ones. Women are usually not paid directly but to their husbands, brothers, etc. This unpaid contribution to informal economy is the largest in this sector.

Women have to perform house chores and kiln duties also. Women labour at kiln complain that they have to go through long tiring hours of work at kilns. They complained also about sexual harassment at kilns and spousal violence at houses.

Mostly labour is male dominant, young (60%) temporary, seasonal and nomadic. (Patra, 2015) In both *Rangia* and *Hajo* 37% labour is female. (Mayuree Das, 2018) In North Sindh No any small kiln employ woman as kiln labour.

Objective of the research is to assess social and economic conditions of women labour at kilns and point out their contributions to the profit at kilns of North Sindh, Pakistan.

Kiln labour attraction model is about factors affecting availability of labour at kiln. Model is with dependant variable labour quantity and with 6 independent variables.

Literature Review

Completing the first three steps do not require skill. Women duties were limited to first three steps only. It was discrimination. (Rubab , 2020)

Two types of labour work at kilns when it comes to wage, i.e. underpaid and unpaid ones. Women are usually not paid directly but to their husbands, brothers, etc. This unpaid contribution to informal economy is the largest in this sector. Muster rolls do not include women and child labour even though their work is significant for the kilns. 65% businesses work in informal economy. 45 million out of 70 million labour force of Pakistan work in informal economy. (Sohail, 2020)

Kiln Bonded labour according to Malik, 2019 are landless families with children, women and belong to ethnic minority section of society. They work as family unit at kilns and payment is only for head of unit. Sometimes children inherit the debt of their parents! They are trapped in debt bondage due to their inability to pay debt back. Also they keep on taking debt further. Higher rate of interest is charged on that loan / debt. e (Hussain, 1997). Advance loan system is called Peshgi system. Generations pay these loans. They

become prisoners at kilns. Their right are violated, i.e. maternity leave , leave on death of family member, free permission to leave kiln site, and sexual abuse etc.

As temperature increased above 34.9C their productivity decreased specially for women. They coped with this by reducing walking speed thus earning less income. Musculoskeletal disorders include back (50% of labour) , neck (38%) and shoulder (29%)pain. Allowed weight that a labourer can carry is 12-40 kg. Labourers with highest level of contact risk with pollutants at kiln are ash handlers, brick unloaders, fire masters, etc. Respiratory diseases include pneumoconiosis and silicosis due to inhaling of siliceous dust at kilns. GIT infections in labour at kilns are frequently present. (Sanjel, 2016)

Vulnerable employees included poor, children, women, undocumented migrants and bonded labourer. (Shrestha , 2019)

Factory is defined, The Factories Act(1934), as place where 10 or more workmen / workwomen are employed to manufacture a product having aid of power or not. In case of Syed Shabbir Husain Kazmi versus Government of Pakistan it is established that kilns are factories and labour inspectors are entitled to inspect all kilns so as to implement all labour laws. (Sohail, 2020)

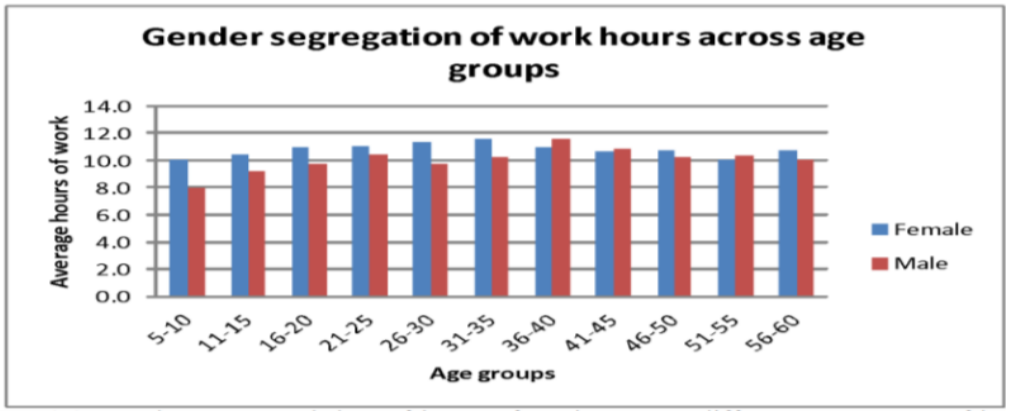

Figure 1: Gender data segregated with respect to hours worked and ages. (Sohail, 2020)

Rubab, 2020 tried to measure / check applicability of Islamic and Legal women rights at kilns in Kasur area. Qualitative methods were used only. They got help from 15 recruited women labourers of the area. They conducted interviews and surveys. They used narrative analysis technique for results. They found there were malpractices at kilns and suggested an awareness program for kiln labour women. (Rubab, 2020)

After giving introduction on the women's Islamic and Legal Rights background Rubab, 2020 , have provided following results.

Women had to perform house chores and kiln duties. Women labour at kiln complained that they had to go through long tiring hours of work at kilns. They complained also about sexual harassment at kilns and spousal violence at houses. In the end they told that the lives of women labour at Kasur kilns were miserable and against Islamic and Legal rules and regulations for such work. (Rubab, 2020).

In the research conducted by Mayuree Das , 2018, it is concluded that women are not specially treated , they are combined with male partners while paying labour.

Patheras were paid per 1000 bricks made at the rate of 500Rs. Kessarejas were paid too similarly at the rate of 175 Rs per 1000 bricks. 11000 Rs were paid monthly to loadmistrys. Rabbishman were paid 9500 on monthly basis. Coylamenand firemen were paid 9000 and 13500 per month respectively. Pakkareja were paid 135 Rs per 1000 bricks processed. (Mayuree Das , 2018)

Hypothesis

Following hypotheses are tested in research regression model.

H1: Average labourwage has sufficient impact on Total kiln labour Quantity

H2: Working hours has sufficient impact on Total kiln labour Quantity

H3: *Peshgi* given has sufficient impact on Total kiln labour Quantity

H4: Female labour has sufficient impact on Total kiln labour Quantity

H5: Total working days has sufficient impact on Total kiln labour Quantity

H6: Annual accidents has sufficient impact on Total kiln labour Quantity

Methodology

Nature

Research is applied. It should be noted that research is restricted to a certain area. A fix area is selected for sampling. Research is limited in the sense that it will revolve around the models already created. And research design is rigid in the sense that it will be used to collect formalized or ungrouped data with already designed research strategies. It is part of three years long doctoral thesis.

Population

Participants are from kiln in North Sindh. Sampling is non random purposive. Data is all ordinal and interval. Focus is cross sectional brick industry chain management analysis.

Sample size and technique

Selected sample size is 90 kilns. Survey method is used.

Instrument

Sample survey and face to face interviews are conducted from year 2020 to year 2022. Data is collected by employing local methods of communication (Sindh language), transport, etc. Data for brick production (at kilns) and kiln labour may be difficult to acquire simultaneously. As the wages given to labourers may not be the one mentioned by owners/producers of kilns. These both data streams may contradict each other or biased on participant end. .Male to female ratio of the participants is a bit twisted.

Data is reliable, valid and related.

Data analysis technique: Simple multiple regression, ANOVA with hypothesis testing. SPSS statistical software is used.

Data is taken from questionnaire used for participants at kilns.

Ethical considerations: Women are vulnerable section of society, they needed assurance to not end their job if provide true data. While at job it was difficult to get data from kiln women labour, thus visited at generational kiln villages nearby.

Following formulas are used to calculate x variables value for the model.

Duncan Index of Dissimilarity or Segregation: This indicator tells about segregation of sexes at the work place kiln. Following data is in the form 1 and later Duncan Index is calculated.

Total (Relevant) Labour Quantity	Female Labour	Male Labour	Fi , Female Fraction	Mi, Male Fraction	|Fi - Mi| Absolute Value

Formula for Duncan Index

$D = 1/2\sum |fi\text{-}mi|$

It is ½ of the sum of absolute values for all kilns

If the value is 23.5 % it means that 23.5% fraction of women has to change occupation to be equal with men.

Male Female Ratio: It is related to labour sex identity. Men die earlier in the overall population thus their presence is required in majority even in workforce. It should be at the rate of 105-100. In Pakistan out of all population only 48.5% is women i.e. there are 106.2 males per 100 female.

Formula used is,

MF Ratio = Males /Females

Gender Wage Gap Index: in Pakistan women earn 34% less than men on average.(Global Report 2018/19). Pakistan ranks the second lowest country in world for gender equality.

Formulae used are,

Total Labour Male % Mean income Female % Mean income

Mean income (Male) = Total male income/ Quantity of males

Gender Wage Gap Index = (Mean male income – mean female income)/Mean male income

If the answer is 13.6% it means on average men labourers are paid 13.6% more than female laborers.

Simple Linear Regression Model

Description: This simple multiple linear regression model tells about factors affecting availability/attraction of labour at kiln. Variables are average labour wage, working hours, *Peshgi* given, female labour, total working days and annual accidents.

Results and Discussion

Women labour is present on kilns. Female payment amount and mode are sometimes different from that of male labour. Their housing units on site are small and lack facilities. Women labour is not given difficult tasks of Firing and Nikasi at kilns. Usually female labour wage is given to the head of family unit. It seems women at kiln are being discriminated.

Housing Facility: Kiln managers are asked if they provide a temporary housing facility at the kiln. Kilns are asked to give number of families residing at the site of the kiln. One house on the site means one bonded family for the kiln.21 participants said that they had provided housing facility to labour at kiln.

Table 1
Average women working at kiln

Houses	1	2	3	4	5	6	7	8	10	12
Average women	4	5.2	6.6	10	11.6	10	10	10	20	20

Small kilns don't provide this facility, 3 medium sized kilns provide it and 18 large kilns provide it. On average there are 2.3 houses at a medium kiln and it is 5.4 houses for a large kiln. On the average there are 6 women labour at medium kiln (with women labour), and 12 women labour at a large kiln.

Moulders (*Pa'ainwara* ,*SiriGar*, *Qalbi*): Their work is to mould bricks at kiln site. They start working at the dawn of the day. They are the most important part of whole brick making process. It does not need high skill level. Their labour needs hard and difficult work of muscles. Usually women are too involved in this moulding job.

Women in labour and Male female Ratio: Women labour at kilns is required specially for certain jobs at kilns. Women labour does not perform fire job at kilns. Their main job is to mould bricks. 23 kilns employed females. On the average 8.5 more males are there per 1 woman working at each of 23 kilns. No any small kiln employ woman as kiln labour. Only 5 medium sized kilns did so. 10.721% of labour force, on average, of the 23 kilns consists of women labour.

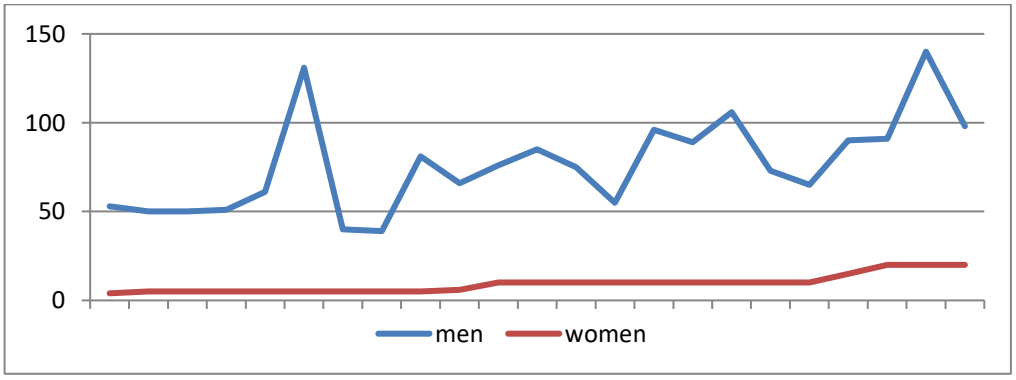

Figure 2 : Men vs women labour at 23 kilns

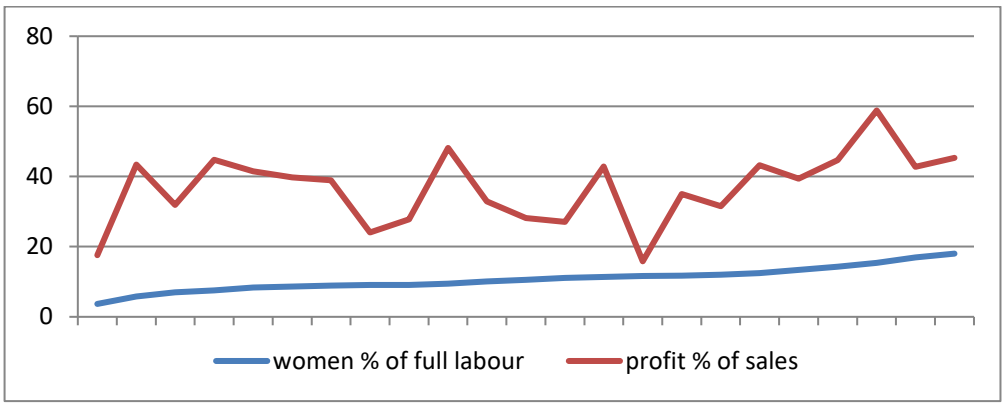

Figure 3: Relationship of kiln profit based on women labour presence

Relationship between women labour at kilns and net profit percentage with respect to Sales: 23 kilns with women labour have 26.03% net Profit percentage based on sales. 67 kilns without women labour have 22.21% net profit percentage based on sales. There will be 4 % loss, on average, if women labour at kiln is not employed.

Proper Latrine: Kiln managers are asked if they provide the latrine service/facility at the kiln especially for the female workers. 61 participants said that they had a proper latrine facility available at/near kiln. 76% of the large kilns, 66% of the medium sized and 50% of the small kilns have provided latrine facility to labour.

Children: If families reside at a kiln there are children also at kilns. They officially don't work at kiln yet they work at kiln with many other workers without any pay. Officially they are not part of kiln labour force. 69 participants said that there are no any children residing with kiln families. There are 11-15 children at 3 kilns, 6-10 children at 8 kilns and 1-5 children at 10 kilns.

Gender wage gap: Data of only those kilns were important where women worked. Following was the average gap of income between these two segments of the kiln population. There is 18.5% wage gap for 23 kilns where women work. It means on average male labourers are paid 18.5% more than female labourers.

Type of job done by women labour at kiln: Women are not employed as firemen squad. They usually perform the duties of molders and stackers.

Comparing male, female and children labour: children that work as labour were asked in Questionnaire form 1 and no kiln has reported any such labour at the work site. But while observing it was noted that kilns with on site housing units had both female and children in the vicinity.

Duncan Index of dissimilarity: Overall it is 42.3%. It means that 42.3% fraction of women has to change occupation to be equal with males.

Regression model: Kiln labour attraction model

This simple multiple linear regression model tells about factors affecting availability of labour at kiln. Variables are average labour wage, working hours, *Peshgi* given, female labour, total working days and annual accidents. Following SPSS regression results were achieved

Table 2
Kiln Labour Attraction Model SPSS Model summary, ANOVA and coefficients

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.834[a]	0.696	0.674	19.05225

a. Predictors: (Constant), TotAccidents, AvgWorkHours, AvgLabourWage, FemaleLabourQ, TotWD, avgPeshgiGiven

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68989.09	6	11498.182	31.676	.000[b]
	Residual	30128.032	83	362.988		
	Total	99117.122	89			

a. Dependent Variable: LabourQ

b. Predictors: (Constant), TotAccidents, AvgWorkHours, AvgLabourWage, FemaleLabourQ, TotWD, avgPeshgiGiven

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.733	30.513		0.057	0.955
	AvgLabourWage	-0.016	0.017	-0.064	-0.944	0.348
	AvgWorkHours	-0.119	2.308	-0.003	-0.051	0.959
	FemaleLabourQ	2.575	0.488	0.371	5.277	0
	TotWD	0.234	0.043	0.442	5.457	0
	avgPeshgiGiven	0	0	0.142	1.708	0.091
	TotAccidents	2.761	1.591	0.113	1.735	0.086

a. Dependent Variable: LabourQ

Regression Equation generated is

LabourQ=1.733-0.064AvgLabrWag-0.003AvgWHours +0.371FeLabrQ +0.442TotWD +0.142AvgPesghi +0.133TotAccts±19.05

Model is valid as two variables are significant. Adjusted R^2 is 0.674 Intercept tells that if all dependent variables are zero kiln will attract only 1.7 labour only. Female labour Quantity and total working days, both variables have significant impact on kiln's full labour Q. Average labour Wage, work hours, *peshgi* given and total kiln accidents have not significant impact on kiln's full labour quantity .Labour Wage and labour work hours have both negative relationships with Full labour Quantity employment.

Conclusion

Women labour at kilns is required especially for certain jobs at kilns. Women labour does not perform fire job at kilns. Their main job is to mould bricks. 23 kilns out of 90 employed females. On the average 8.5 more males are there per 1 woman working at kilns. No any small kiln employs woman and only 5 medium sized kilns did so. 10.721% of labour force, on average, of the 23 kilns consists of women labour. There will be 4 % loss, on average, if women labour at kiln is not employed. There is 18.5% wage gap for 23 kilns where women work. It means on average male labourers are paid 18.5% more than female labourers. Duncan Index of dissimilarity is 42.3% meaning that 42.3% fraction of women has to change occupation to be equal with males.

21 participants said that they had provided housing facility to labour at kiln. Small kilns don't provide this facility, 3 medium sized kilns provide it and 18 large kilns provide it. On average there are 2.3 houses at a medium kiln and it is 5.4 houses for a

large kiln. On the average there are 6 women labour at medium kiln (with women labour), and 12 women labour at a large kiln.

Only 23 kilns employ women knowing that 4 % net increase in profit associated with them.

The presence of women labour at 26 kilns has increased net profit by 4 percent. Kilns should employ more and more women labour.

Mostly labour is male dominant, young (60%) temporary, seasonal and nomadic. (Palash Patra et al., 2015) In both *Rangia* and *Hajo* 37% labour is female. (Mayuree Das et al, Assam, India, 2018) In North Sindh No any small kiln employ woman as kiln labour. Only 5 medium sized kilns did so. 10.721% of labour force, on average, of the 23 kilns consists of women labour.

Kiln labour attraction model is about factors affecting availability of labour at kiln. Model is with dependant variable labour quantity and with 6 independent variables. Results achieved are at adjusted R^2 value of 0.674 and model ANOVA is significant, with only 2 variables significant (female labour quantity, total working days) But average labour wage, average work hours, average *peshgi* given and total accidents are insignificant variables having no impact on dependant variable.

Recommendations

It is recommended that women participation at North Sindh traditional kilns be increased, their wage rate be equated with men labour, and their social security be increased.

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