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The Impact Assessment of Female Entrepreneurship on Household Income: An Empirical Analysis Based on Heckman Selection Model for Pakistan

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Abstract

Household enterprises provide employment opportunities, especially for females that not only enhance their entrepreneurial abilities but also generate substantial income. This income generation brings forth strength, confidence self-reliance, and empowerment that have a trickle-down effect on the economy. Household enterprises referred to as micro and small enterprises have played a significant role in socioeconomic development especially in removing financial constraints, improving self-confidence, and growing and realizing their potential through empowerment. The majority of female household enterprises found in the informal sector are the major source of income for poor households. Dual household responsibility time constraints and social-cultural norms hinder females from entering the labour force therefore household enterprises provide opportunities and well-being to the family. This research paper aims to analyze the impact of female entrepreneurship on household income. For this purpose of estimation used Pakistan Social Living Measurement Survey/Household Integrated Economic Survey data by the technique of Heckman-Selection Model throughout 2018-2019. The results show that female-owned enterprises play a pivotal role in socioeconomic development and are a major source of employment and income for poor households.

Keywords: Informal Labour Market, Household Finance, Wage Differentials, Employment Effect, *JEL Code*: J46, J31, G5, H31

Introduction

The paper investigates, the important question of what is the role of household enterprises to perform in income generation in Pakistan, covering respect to females. Household enterprises are especially covered in the data under the head of non-farm income-generating activities. In most research studies, the impact of household enterprises on household income has not received as much attention as required. This is the reason behind that far from both modern and growth-oriented small enterprises. Criteria of wage employment generation in these enterprises are finite as against the formal small enterprises (Abdou, et al., 2019). Household enterprises and traditional enterprises can be differentiated by their two prominent characteristics that are identified by in-depth research: first, consist of a low level of organization while second based on interpersonal relations rather than the proper selection (La Porta & Schleifer, 2008; Tokman, 2007).

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Globally the evidence of literature shows household enterprises referred to as micro and small enterprises have performed a pivotal role in socio-economic development Mahjabeen (2008), especially in reducing the financial burden in a household (Abonge, 2012). Most research identifies household enterprises consisting of the informal sector that provides the major source of employment and income for poor household families. To agree that Barrett et al., (2001) and then Reardon et al., (2000) focused on Sub-Saharan Africa and Latin America that non-farm income provides near about 40 to 45 % of the average household income (rural) while 30 to 40 % income of households in South Asia (Deo, Kalisa & Theogene, 2016). The following literature shows by the study of Sub-Saharan Africa, substantially the involvement of household enterprises in the income and employment ratio has increased discussed by (Lanjouw, 2001; Start, 2001; Haggblade et al., 2010). However, in Pakistan on average Rs. 1556 thousand incomes are generated by the household enterprise on an annual basis.

The household enterprises disclose the different types of impediments as compared to other forms of small and medium enterprises explored by (Loening, Rijkers, & Soderbom, 2008, Fox & Sohnesen, 2012). Furthermore shed light on economic policy differences and cycles evaluated by (Mead & Lindholm, 1998; Schoar, 2010). Critically observed in earlier studies Grimm, Kruger, and Lay (2011) identify a huge capital return on urban areas of some Sub-Saharan African countries of these enterprises as against large enterprises; while according to De Mel et al. (2007-2008), this result does not apply to South Asia. Performance wise largely enterprises have based on the economies of developed countries discussed by (Moretti, 2004; Van Biesebroeck, 2005; Foster et al., 2008). Similarly, this narrative explained by Nichter & Goldmark (2009), Bloom & Van Reenen (2013), Ali & Peerlings (2011), Amin (2011), Kinda et al. (2011) also observed by (Martin et al., 2011; Saliola & Seker, 2011; Rijkers & Costa, 2012; & Bloom et al., 2013). However, in developing countries especially like Pakistan, the subject gains less attention where up to 72 percent of the economy relies on the informal sector of household enterprises.

Moreover, as a cooperative unit households and communities are considered to provide strength and support to the economy (Jennings & Brush 2013). Through the assumption, this has been realized that better control of women on access to resources enables them Sarfaraz, Faghih & Majd (2014), to generate income for their family or household by trickle-down effect[1] into the economy and make a significant contribution to the growth (Carr, & Sequeira, 2007). This women's economic activity promotes employment for other women and further develops a channel. This promotion will identified and

[1]According to the theory, an increase in per capita income is associated with the reduction of poverty.

appreciated by further household members leading to increased household well-being. Additionally, women's increased role in decision-making will also enhance prosperity for themselves. This incremental position in the household will sequentially give women courage and enable them to cooperate with men to bring changes in gender inequality in society. Furthermore, the claim that female entrepreneurship in Pakistan contributes less to household income needs a detailed impact assessment. The contribution of household enterprises as claimed by international studies in generating employment and thus eliminating/reducing poverty is evident from the literature (Sutter, Bruton & Chen, 2019). However, in the case of Pakistan, very limited evidence is available. The available evidence has also ignored the female contribution to these enterprises as well. Based on the limited evidence available present study assesses the impact of household business owned and operated by females on household income.

The paper consists of the following segments; introduction and review of the literature, the second segment describes methodology and data. The third consists of empirical results and discussions. The fourth segment focuses on conclusion and policy recommendations.

Review of the Literature

Women have a limited scope of work due to gender discrimination, wage differences, social and cultural norms, and low decision-making power enforcing females into the labour market. In Sub-Saharan Africa in the Yala region study was conducted on how the women generating small business income influenced the household income (Jiggins, 1989). The survey-based study consists of a sample of 317 women from the local government area. The study revealed by use of the monkey sample determinants technique that the contribution of women related to small business income makes a significant increment on household income and wellbeing. The majority of women belong to rural agriculture farmer's areas where the contribution remained low as compared to their counterparts. Descriptive statistics show that about 97 percent of women do not rely on their husbands' income. The evidence discloses that 80 percent of women without husband support can bear the whole burden of the family meanwhile 63 percent spend part of their income to run the household expenditures (Okunnu & Akinjole, 2016). The author suggested that the government should take concrete steps to facilitate women by implementing microcredit and self-help group programs (Mary et al., 2021). Entrepreneurship related to women not only accelerates the household income and well-being of society's poverty reduction but also generates employment for other women. On an individual basis creates self-reliance, confidence, and decision-making power that further make connections for the better of child education and health activities (Afrin, Islam, & Ahmed, 2010). Mainly the study focused on the contribution of women entrepreneurs to household income and influence that is more effective during the

pandemic period. To explore the determinants and role of women entrepreneurs in an in-depth study conducted in rural and urban areas of Faisalabad Pakistan by well-structured questionnaire with the help of the technique Order Logit model. The findings of the results show rural areas' contribution to household income is observed at around 54 percent, which signifies more as compared to urban areas, accounted 50 percent, which provides a cushion for the family, although returns remained very low due to the agriculture employment activities as compared to other sectors where returns are considered higher. Authors indicate that the lack of financial literacy, awareness about the field, and training facilities should be provided by the government side discussed by (Taoan Ge et al., 2022).

Labour force participation or economic autonomy is a need of time for women, especially in developing countries where poverty, unemployment, financial crisis, and other circumstances enforce to get relief and cause to reduce these vulnerabilities. The current study shed light on these issues in Murdan City (KPK province) in Pakistan. The study highlighted the different factors like age, education, marital status, family size, region-wise location, business income, and ownership that influence the household income when women work as household entrepreneurs (Carr & Sequeira, 2007). In Pakistan, women's home-based businesses recognized by the informal economy like low literacy rate, lack of self-confidence, restricted social and cultural norms and the dominant patriarchal system do not permit the women to go out. The author tries to explore and identify these crucial facts by the study using logistic regression applied to 504 samples of women entrepreneurs' impact on the financial condition of households. The result reveals under the age brackets (31 to 36), 30 percent of women relate to home-based businesses where 69 percent have their own homes, majority of women have no formal education. Women who have a home-based business and live in urban areas are considered an average financial position. Illiterate women with higher income positions are equally considered the higher income family as educated women because both are considered concerning experience and education in their fields. This realized home-based earning gives better support compared to far-reach entrepreneurs in terms of time management taking care of children and bringing more substantial benefits (Said et al., 2021).

Better resources under the supervision of women led to improved household welfare and income and then further accelerated economic and social development (Poole, 2018). According to the UNDP Women's empowerment causes to multiplier effect on gender equality, reduces poverty, and creates child well-being in present and future generations. Most women face barriers to entry into the labour market by their lack of education, unawareness, and some sort of others that could easily be adjusted in home-based or household enterprises rather than formal markets (Hobcraft,1993; World Bank, 2014; Taniguchi 2002). The present paper finds out the correlation between the socioeconomic factor and women-owned businesses in Ghana by the Instrumental variable approach.

Findings indicate household enterprises improve the welfare of the house reduce poverty, financial crisis, and childcare activities, and share the burden of the husband and owner of the household. Estimation of the results also shows a 10 percent increment in women-owned businesses increases household expenditure by 0.6 percent presenting improvement in household wellbeing. The author suggested policies to reduce the borrowing cost and the government should implement venture capital funds and take the initiative for the microfinance programs (Seshie-Nasser, 2018). Globally facts and figures show that women entrepreneurs in the Middle East and Africa are recorded at the top of the list concerning business ownership while Angola is one of those where fifty percent of women run their enterprises discussed (Elam et al., 2021). The present study examines the Nexus between women's entrepreneurship, income, and employment relations through the ANCOVA regression model. The finding of results revealed that the rising own-enterprises ratio in these areas generates employment for women workers and then increases their income. Survey-based questionnaire reflects that 96% of women do not have a formal type of education. Statistics explain spending and employment have a strong correlation with women's earnings, however 60 % variation accounted for average women entrepreneurs earning daily by the estimation results identified by (Zainab et al., 2023).

Although a percentage of women are less likely to engage in their enterprises as compared to men where in Ghana the rate of trend engagement for women's enterprises is much higher than the male counterpart (Oduro et al., 2011). Gender difference in enterprises has always remained a crucial issue for developing countries, the author focused on male-female earning issues and concluded male earnings ratio remains higher than female earnings in terms of different factors (Audretsch et al., 2006). According to the Global Entrepreneurship Monitor (2008), a report surveyed 43 countries, different income levels by gender ratio represented for the own enterprises. In the Middle income, countries 75% of males are observed as active entrepreneurs than females in business. Gender wise this ratio declines 33% for higher income countries although for lower income it presents around 41% more.

Research Methodology and Data

Female entrepreneurship in the form of female-owned household enterprises gives the power and strength to females to move a step ahead not only for themselves but also to share the financial burden. Female-owned household enterprises are hence presumed to have a direct impact on household welfare. Further, to assess the impact of female entrepreneurship on household income the study must address the selectivity issue – female empowerment by owning and managing the household enterprise. For this, the paper aims to explore socio-economic factors that influence the female decision before estimating its impact on household income. The study has hence, employed the Heckman

selection model[2] (Tobit Type 2) – correcting selectivity bias. Specifically, we have used the two-step Heckman Selection Model to examine the effects of female-owned enterprises on household annual income (log). In the first step, the probit model is estimated to generate an Inverse Mills Ratio, which is based on the factors that affect female decisions to own enterprises. The second step shows the outcome equation i.e. it explores the impact of the decision to own and operate an enterprise on household income.

The coefficient of the Inverse Mills ratio is suggestive which means the selection equation (female ownership of enterprises) rules by the unobservable selection process. In our model, the selection equation is represented by female ownership of enterprises while the outcome equation shows factors influencing household income. The model by the given equation.1, elaborates on the factors that affect female decision-making power to engage in entrepreneurial business;

$$fement_i = \beta_0 + \beta_1 \sum_{j=1}^{3} PERCH_{ij} + \beta_2 \sum_{l=1}^{4} HUSB_{il} + \beta_3 \sum_{s=1}^{5} HOUS_{is} + \beta_4 \sum_{k=1}^{2} HEAD_{ik} + \beta_5 INCEX_i + \beta_6 POV_i + \beta_7 REG_i + \varepsilon_i \text{---------(1)}$$

Variables Description

$According\ to\ equation\ 1, fement_i$ in the model is a dependent variable where i shows the individual female while the independent variables express $PERCH_{ij}$ the personal characteristics of the female, $HUSB_{il}$ indicates the husband's characteristics. Household characteristics are represented by $HOUS_{is}$ meanwhile $HEAD_{ik}$ indicates the head characteristics an income-expenditure ratio is explained by $INCEX_i$. Provincial POV_i and the REG_i represent the region-wise dummies in the model. Moreover, ϵ_i indicates the error term. Here, $fement_i$ consists of binary numbers (1 and 0) that are equal to 1 when the female is an entrepreneur and otherwise will be considered 0, where the symbol of i denotes individual females in the sample. Here variable *PERCH* stands for personal characteristics (here age, experience, and years of education), while HUSB expresses the attributes of a husband that consist of the age of the husband his education as well on

[2]Used for the correction of non-random missing in the outcome measures (Dependent variable) that create potential biasness in the model Heckman Selection model consists of two equations first will focus on selection into the sample while the second one makes the connection with the covariates of interest to the outcome.

wages. Housing characteristics explored by *HOUS* that are integrated by congestion that depends on the area, availability of gas, access to electricity, toilet facility, and water availability identify how the economic activity affects households).

The *HEAD* variable explains education and age by the household head (covering cultural norms). Another variable of interest is the income-expenditure ratio discusses and analyzes the financial condition of households encouraging the females to own their businesses. In light of the detailed literature review, the given variables are incorporated into the estimation model. However, a possible endogeneity problem in considering the income of female entrepreneurs no ten compassed in the model may create the causal effect. The whole process of income that is generated by entrepreneurial business encourages females' self-reliance, confidence, and well-being in society.

Personal characteristics of females and years of education are the most important segment that makes the business successful. As education brings awareness, knowledge, and power to make their own, give confidence in themselves, and motivate females to become involved in economic activity, a positive and significant impact is hypothesized. Female decisions to own enterprise are hypothesized to a have positive relationship with age. An increase in age causes an increase in skill and knowledge to promote female entrepreneurship. The literature highlighted that Females in mid and post-mid-age, produce a better outcome.

The study explores the impact of husband characteristic *HUSB* such as age, education, and wage on working females - who are running their enterprises. The husband or spouse's age and education may affect female enterprise either positively or negatively. If their husband is supportive then he will support her business. Negative relations in this context would indicate that culture might be restricting his support for the business. As far as spouse income/wage is concerned, the study hypothesized a negative relation between spouse wage and the female enterprise. The higher earning power of the husband demotivates the wife to enter into the labour market, which is characterized as gender discriminatory.

However, Household characteristics, *HOUS*, depend on socio-economic conditions, which comprise water, gas, electricity, toilet facilities, and congestion in the house. A good standard of living is the basic right of each citizen. Easy and convenient socio-economic conditions provide relief to females such as clean-piped water and availability of electricity and gas connection makes her work at home more convenient. Finally, to control the social and cultural norms further, in the given model dummies concerning province and region wise incorporated with the hypothesis that each province and region is different in terms of prevailing culture and norms.

Secondly, the outcome model, which assesses how much a female decision to own an enterprise affects household income, is expressed in equation 2;

$$HI_i = \beta_0 + \beta_1 \sum_{l=1}^{4} HUSB_{il} + \beta_2 \sum_{s=1}^{5} HOUS_{is} + \beta_3 \sum_{k=1}^{2} HEAD_{ik} + \beta_4 INCEX_i + \beta_5 \lambda_i + \beta_6 POV_i + \beta_7 REG_i + \varepsilon_i \text{---------(2)}$$

In the above equation *HI* - the dependent variable is a log of household income while explanatory variables are the same except for the inclusion of inverse mills ratio. Regression results of the probit model generate the inverse mill's ratio in the form of lambda. If it remained significant, suggests that there is a serious selection bias issue in the study. At this stage – the outcome model – the study included the household characteristics and head of the household age and education only – keeping aside the enterprise's attributes. Analysis has included the same factors as in the selection stage. Furthermore, the study has taken information on the number of earners and dependency ratio to be included in the outcome model. The assumption behind additional control is that the number of earners in a household can influence the decision to own and operate an enterprise, as surplus labour can be allocated into the household enterprises – family labour to avoid hired labour costs, while the dependency ratio may demotivate the females to decide to become self-employed, because of the family liabilities.

Descriptive Statistics

The descriptive analysis consists of the following heads female enterprises by gender, Total household enterprises and their net income by province and region, female enterprises and net income concerning province and region. In terms of ratio, it covers household income expenditure ratio and ratio of female enterprises income to household income according to the province and region in Pakistan.

An overlook of household enterprises by gender (owned and not owned enterprises) is given in Table 1. The descriptive statistics show that not-own enterprises consist of males 93.2% and females 99.5%. However, the owned enterprises that consist of males show around 6.8% as compared to female enterprises that accounted for only 0.49%. The majority of female entrepreneurs in Pakistan belong to the informal sector and are fulfilling their socio-economic needs not only for themselves but also for their families. The increasing unemployment rate, low wages, and poverty combine forcing them to run their enterprises as self-employed. The low percentage of female participation indicates that they have dual responsibilities with social and cultural norms that restrict them from moving ahead.

Table-1: Household Enterprises by Gender

Female Enterprises	Gender		Total
	Male	Female	
Not Own Enterprises	74,853	80,130	154,983
	48.3	51.7	100
	[93.2]	[99.51]	96.36
Own Enterprises	5,463	398	5,861
	93.21	6.79	100
	[6.8]	[0.49]	3.64
Total Enterprises	80,316	80,528	160,844
	49.93	50.07	100
	[100]	[100]	100

Source: Author's Illustration based PSLM/HIES -2018-19

Statistical analysis of total household enterprises- net income in Pakistan by province and region represented byTable-2fact shows that in KPK province the total net income is around Rs1381851 in Punjab accounted Rs1670810 while in Sindh recorded Rs 1534201, and for Balochistan this figure is around Rs1273976. Therefore, above all the total net-income by total household enterprises recorded Rs1556767 annually. Although region wise comparison indicates the highest figure in urban Punjab that is around Rs 2265231.

Table-2: Total Household Enterprises-Net Income by Province and Region

Region			
Province	Rural	Urban	Total
KPK	1204073	1579799	1381851
	3456821	5980516	4820295
	687	617	1304
Punjab	1137328	2265231	1670810
	4732809	6111651	5457067
	1668	1497	3165
Sindh	908969.5	1866446	1534201
	2043214	5072707	4295129
	347	653	1000
Balochistan	873076.5	1587007	1273976
	2132415	8371384	6433248
	171	219	390
Total	1109979	1986648	1,556,767
	4079033	6076809	5212127
	2873	2986	5859

Source: Author's Illustration based PSLM/HIES -2018-19

After a wide discussion on total household enterprises and net income through province and region the study moves on to explore the female-owned enterprises by net income. Table-3 highlights the total net income in Pakistan of females is around Rs 171,203 annually, in rural areas represents Rs 204,018 annually is greater than the urban net income of Rs 132,650 annually, while in numbers accounted 398, in that rural belongs to 215, and urban shows only 183. The situation becomes quite different when we look at Balochistan statistics where there is only one enterprise is running out in the urban while no one found in the rural side.

Table-3: Female Owned Enterprises-Net Income by Province and Region

	Region		
Province	**Rural**	**Urban**	**Total**
KPK	93647.93	118688.3	105282.8
	337420.3	202541.6	281791.1
	53	46	99
Punjab	242014	121003.4	189779.2
	529653.7	480836.5	511794.6
	158	120	278
Sindh	165600	252306.3	234965
	121229.7	773024	689455.9
	4	16	20
Baluchistan	.	258000	258000
	.	0	0
	0	1	1
Total	204018.4	132650.1	171203.3
	487640.4	460487.1	476088.3
	215	183	398

Source: Author's Illustration based PSLM/HIES -2018-19

Table-4 represents the household income expenditure ratio by province and region. Statistics show that among all the provinces KPK total expenditure remained highest at 1.67% while region-wise it shows 1.84% rural than in urban expenditure1.32%. The household income expenditure ratio in Punjab comes on second, where total expenditure are around 1.29%, while the distribution of rural percentage again found highest1.34% as compared to 1.19%. However, in Sindh and Baluchistan, the condition of income expenditure is more or less the same, which indicates 1.07% in Sindh while in Balochistan it gives 1.03%.

Table-4: Household Income Expenditure Ratio by Province and Region

	Region		
	Rural	**Urban**	**Total**
KPK	1.846	1.326	1.674
	(5.534)	(1.922)	(4.666)
	20717	10251	30968
Punjab	1.348	1.196	1.298
	(3.972)	(2.396)	(3.530)
	43268	21394	64662
Sindh	1.096	1.055	1.079
	(1.484)	(0.474)	(1.174)
	22517	16097	38614
Baluchistan	1.035	1.027	1.032
	(0.356)	(0.307)	(0.341)
	12587	5971	18558
Total	1.355	1.160	1.287
	(3.727)	(1.755)	(3.178)
	99089	53713	152802

Source: Author's Illustration based PSLM/HIES -2018-19

Note: S.D in parenthesis, express above S.D is meanwhile below shows no. of observations.

The ratio of female enterprises' income to the household income concerning province and region is discussed in Table -5. Where overall observation is around 152802, the total ratio of female income to household income reflects in percentage is approximately 0.82%. Individually the percentage ratio shows by province KPK 0.92%, Punjab 1.0%, Sindh 0.58%, and Balochistan 0.50% respectively. The total urban percentage of female income to household income is higher at 1.28% than rural which is around 0.57%.

Table-5: Ratio of Female Enterprises Income to Household Income by Province and Region

Province	Region		
	Rural	Urban	Total
KPK	0.702	1.379	0.926
	(2.66)	(5.018)	(3.630)
	20717	10251	30968
Punjab	0.720	1.592	1.008
	(4.000)	(5.343)	(4.508)
	43268	21394	64662
Sindh	0.331	0.940	0.585
	(1.799)	(3.453)	(2.636)
	22517	16097	38614
Baluchistan	0.302	0.926	0.503
	(1.910)	(7.737)	(4.671)
	12587	5971	18558
Total	0.575	1.282	0.823
	(3.115)	(5.147)	(3.965)
	99089	53713	152802

Source: Author's Illustration based PSLM/HIES -2018-19
Note: S.D in parenthesis, express above S.D is meanwhile below no. of observations

The province of Punjab and the KPK show the highest ratio at 1.59% and 1.37% percentage values among the other provinces.

Empirical Results and Discussions

The empirical analysis explains the following factors that influence female decision-making power to run enterprises by the probability that a rise in education years will be caused by to rise in female entrepreneurship. To explore the marginal effect here (as the change of one unit in years of education raises the probability of enterprise ownership to 0.0003 points. Expression by coefficient stated that Probit estimation presents the change in z-value for a unit change in predictor), with a one-unit increase in years of education, the z-value increases by 0.016 explained in Table-6.

The years of age to the dependent variable (female own enterprise), shows a positive sign due to the quadratic correlation as experience increases with the rising age. However, to reach the threshold level (age of 38 years) one more unit change causes to decline in the

probability of female enterprises. Concerning marginal effect changes in the age of one unit, make the probability to increase the female enterprise ownership by 0.002 points while reaching a maximum age increment in one more unit change in age decreases the probability to 0.00002 points for ownership. [Explanation by coefficient shows a one-unit increase in age, the z-value increases by 0.088 points and decreases by 0.001].

The focus on husband attributes study has integrated three factors, age, education, and wages. Here age and wage observed significant factors that influence the female decision. The change in spouse age by one unit raises the expectation of owning a business by 0.001 points. [In terms of value coefficient, rise in one unit of spouse age the z-value increases by 0.047]. While a unit change in spouse wage decreases the expectation of business by exp (0.006) = 0.99 points [one-unit rise in the age, the z-value declines the exp (0.293)=1.3].

Moreover, household attributes are covered through the living standard of proxy. The research explores the influence of per-person room information on congestion, and access to basic needs like availability of gas, toilet facility, electricity consumption, and water supply. Among these variables, housing conditions, gas, and electricity deliver a positive impact whilst congestion shows a significant but negative impact. However, gas and electricity within the household increase the expectations of enterprise by 0.004 and 0.007 points. Further congestion in houses causes to decline in the expectation of household enterprise by 0.004 points.[by value coefficient, of gas and electricity connections, the z-value raises by 0.197 and 0.36 subsequently while in a congested home, the z-value declines by 0.21].

Variable head of household attributes explain the significant and negative impact on female enterprises and indicate the movement towards older age reduces the chances of economic participation for females in society. Analysis shows that a change in one-unit for the head of the household age will decline the expectation of enterprise by around 0.0004 points [regarding the coefficient value, estimation of one-unit increase in the head age, the z-value declines approximately 0.018]. Estimation shows by the variable of household income-expenditure ratio that presents positive and significant results which manifesting the change of one unit in this variable raises the expectations of enterprise near 0.003 points [similarly its coefficient value discloses as in one-unit increase in this ratio, the z-value increases to 0.14].

The impact of provincial and regional dummy variables exhibits, that residents in Sindh and Balochistan found significant results while concerning Punjab found negative and insignificant. The impact of negative signs points out the restricted social & cultural norms, which confined females to run their business. Meanwhile, the urban variable response is significant and positive that express surroundings are more encouraging to run for the female enterprises.

Table-6: Factors Influencing Female Decision to own and operate Enterprise

Dependent factor: Female own Enterprise	Estimated Coefficients	Marginal Effects	Z-Value
Personal attributes			
Years of Education	0.02	3.3E-04	2.26**
Age	0.09	1.8E-03	2.88**
Square of the Age	-0.001	-2.4E-05	-2.96**
Husband attributes			
Spouse Age	0.05	9.7E-04	1.70***
Square of Spouse Age	-0.0004	-8.4E-06	-1.31
Spouse Education	0.002	4.0E-05	0.11
Spouse Wage (log)	-0.29	-6.0E-03	-5.88*
Household attributes			
Gas	0.20	4.0E-03	2.78**
Electricity	0.36	7.4E-03	2.27**
Toilet	0.08	1.6E-03	1.09
Water availability (piped)	-0.03	-5.6E-04	-0.36
Congestion	-0.21	-4.3E-03	-1.60***
Head attributes			
Head Education	-0.002	-3.4E-05	-0.10
Head Age	-0.02	-3.7E-04	-4.58**
Household Income Expenditure ratio	0.14	2.9E-03	2.67**
Province			
Punjab	-0.08	-	-1.17
Sindh	-0.81	-	-7.06*
Balochistan	-1.10	-	-3.90*
Region			
Urban	0.12	-	1.69***
Constant	-1.24	-	-1.88
No. of observation	24400		
Wald Chi2(19)	256.24		
Probability>Chi2	0.0000		
Pearson Chi2(24376)	31411.88		
Probability>Chi2	0.0000		

*Note: *, ** and *** represent significance at 1%, 5%, and 10% levels respectively.*

Under the Probit estimate – female decision to own and operate enterprises – personal, household, and head attributes (almost all the variables) show significant results. The result obtained from the outcome model identifies that the variable number of earners has a positive and significant impact on household income - a higher number of earners in the family produces higher household income and hence collectively increases the household income. The coefficient of the number of earners shows that as the number of earners increases by one member the household income would increase on average by 23 percent.

An increase in the dependency ratio will cause to increase in the household income to fulfill the expenditure of the family here the coefficient of dependency ratio explains that increases in the number of dependents will increase the household income in percentage by 6.7 percent. The result for household attributes sheds light on the fact that the availability of facilities such as gas and electricity shows significant results. Increasing the availability of gas and electricity on average causes household income to increase by 36 percent and 82 percent respectively. For congestion, the study found out that, as room per person increases the space available for each person increases, which causes to rise in employment, which has raised the household income by 26 percent.

In addition, features of the head of the household draw attention like household head years of education and age impact household income significantly, one more year in education and experience will raise overall income, and on average one year of increase in the head of household education raises the household income by 19 percent. Further, for head age, our empirical results show that older age will reduce household income. On average one year, an increase in age decreases the household income by -0.8 percent. To see the regional and cultural impact on income, dummies are added to the model. The results show that only people residing in Sindh province have significant but negative impacts on household income while people in urban regions positively raise household income Table.7

Similarly, the females own enterprises by personal attributes explained by the hypothesized cause, increment in age as well education of females accelerates the household income and reduces the financial burden in terms of well-being. The sound decision-making power of females through education empowers her and the rise in age increases her experience and self-reliance reflected in her status and causes to increase in her income as a female enterprise. The result explains that both variables have a positive and significant impact on female enterprises. As by the coefficient, this can be emphasized more clearly that on average per year increase in education and age raises the female own enterprises by 1.6 percent and 8.8 percent respectively.

Table: 7 Heckman Two-Step Selection Model

Log of Household Income	Coefficient	Standard Error	T-Stat
Household attributes			
Number of Earner	0.237	0.033	7.11*
Dependency Ratio (sum of Children & Elders divided by Earners)	0.067	0.042	1.60***
Gas	0.367	0.086	4.28*
Electricity	0.820	0.220	3.73*

Toilet	0.104	0.091	1.14
Water Availability (Piped)	-0.028	0.097	-0.29
Congestion	0.265	0.144	1.83***
The ratio of Enterprise income to household income	0.007	0.009	0.86
Head attributes			
Head Years of Education	0.019	0.008	2.42**
Head Age	-0.008	0.004	-2.04**
Province			
Punjab	0.017	0.086	0.20
Sindh	-0.555	0.195	-2.85**
Balochistan	-0.546	0.467	-1.17
Region			
Urban	0.225	0.081	2.76**
Constant	8.968	0.513	17.47
Female own Enterprise			
Personal attributes			
Years of Education	0.016	0.007	2.26**
Age	0.088	0.031	2.88**
Square of the Age	-0.001	0.000	-2.96**
Husband attributes			
Spouse Age	0.047	0.028	1.70**
Square of Spouse Age	-4E-04	0.000	-1.31
Spouse Education	0.002	0.017	0.11
Spouse Wage (log)	-0.293	0.050	5.88***
Household attributes			
Gas	0.197	0.071	2.78**
Electricity	0.361	0.159	2.27**
Toilet	0.077	0.071	1.09
Water availability (piped)	-0.027	0.076	-0.36
Congestion	-0.212	0.133	-1.60***
Household Income Expenditure ratio	0.142	0.053	2.67**
Head attributes			
Head Education	-0.002	0.017	-0.10
Head Age	-0.018	0.004	4.58***

Province			
Punjab	-0.080	0.069	-1.17
Sindh	-0.806	0.114	7.06***
Balochistan	-1.100	0.282	-3.90**
Region			
Urban	0.117	0.069	1.69***
Constant	-1.239	0.660	-1.88**
Mills Ratio			
Lambda	0.767	0.169	4.55***
No. of observation	24400		
Wald Chi2(15)	134.18		
Probability>Chi2	0.0000		

Source: Author's Illustration based PSLM/HIES -2018-19
*Note: *, ** and *** represent significance at 1%, 5% and 10% levels respectively.*

Assessment concerned with husband attributes and their influence on female enterprises shows that only two variables spouse age and spouse wage (log) indicate significant impact. An increase in a spouse's age increases his experience and skills and will support her spouse as well. An increase in female enterprises by the coefficient expressed, as one unit change in spouse age will affect female enterprises by 4.7%. For the variable spouse wage (log) in terms of coefficient, a one percent increase in husband wage is probably to decline the female enterprises by -29.3%, because of handsome salary of her husband will cause to decline the spouse participation in the labour market.

The good standard of living is shown by the better household attributes as according to the results gas, electricity, congestion, and household income expenditure ratio shows a positive and significant effect on female enterprises. In terms of coefficients, these variables explained one percent change in gas and electricity will increase the female enterprises on average by 19.7% and 36.1%. While the decline in congestion in enterprises will increase, the female enterprises in terms of one unit change in the coefficient of congestion increase the female enterprises by 21.2%. Variable household expenditure ratio influences female enterprises as the coefficient explains one average 1-unit increase in the ratio of household income expenditure will influence female enterprises by 14.2%.

Moreover, to discuss the head attributes only head age has a significant impact on household income. An increase in one unit in the age of head decreases the female enterprises to -1.8% percent. Social and cultural norms restrict female from carrying on their business smoothly result shows that Sindh affects significantly female enterprises but with negative signs while Balochistan negatively restricts female enterprises. Unit

change shows one average one unit change decline and restricts female enterprises' movement. Region-wise, only urban areas are affected positively by the change in coefficient 1.7% influence on female enterprises.

Finally, the inverse mills ratio coefficient shows a positive and significant result means that the selection equation (female decision to own enterprises) rules by the unobservable selection process. In terms of coefficient gives a positive and significant impact on female enterprises by 76.7%. The insertion of the inverse mills ratio in the outcome model ensures that the coefficients of the second step - the outcome equation, show an unbiased result.

Conclusion and Policy Recommendation

The overall study summarizes that the majority of females in household enterprises belong to an informal sector, which provides the umbrella for illiterate and lower-middle-income females to remove financial constraints and generate empowerment. Female enterprise plays a significant role in socioeconomic development and hence is the major source of employment and income for poor households.

Based on the above finding the following recommendation is made; Household enterprises present in the informal sector remained the major source of employment and income generation. The government should facilitate this household and levy low charges or minimum unit charges on electricity bills. As mostly female belongs to the informal sector like in rural areas where they have limited control over assets or nor do they have collaterals to fulfill the banking loan requirements while the only source that provides support is family and friends. Banks/institutions should play a powerful role by expanding their circle through credit card services in their areas.

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Endnotes

[1]According to the theory, Increase in per capita income Associated to the reduction of poverty.

[2] used for the correction of non-random missing in the outcome measures (Dependent variable) that creates potential biasness in the model Heckman Selection model consists of two equations first will focus on selection into the sample while the second one makes the connection with the covariates of interest to the outcome.

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