Impact of Information and Communication Technologies on Women Vulnerabilty in Pakistan: A Micro Data Analysis

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Abstract

This study examines the impact of ICTs on women vulnerability in Pakistan. The study evaluates accessibility and availability of ICT's tools (Internet, Telephone, Computer, Mobile), contribution of ICT's to minimize women vulnerability. In the majority of countries with available data, less than 40 percent of the women who experience violence seek help of any sort. Less than 10 percent of those women seeking help for experience of violence sought help by appealing to the laws. Aim of this study is to measure women vulnerability in Pakistan and to empirically investigate the impact of ICT on women vulnerability at household level. Household level data from PDHS (Pakistan Demographic and Health Survey) for 2017-2018 has been used for estimating the women vulnerability index and other variables using Principal Component Analysis (PCA) technique. It delivers a first appearance on the role of ICT to reduce women vulnerability by incorporating the outcomes of ICT i.e. Positive change in productivity, job creation, awareness and ensuring availability and possession of assets. Outcome of this research shows that increase in ICT access causes lower women vulnerability and suggested that ICT can enable them to participate efficiently in numerous field, including planning and decisions making at the family, institutional and societal level. ICT can empower rural women economically by eliminating poverty, decreasing trade distortions, increasing productivity, empowering weak segments and obtaining information regarding market prices etc. Study suggested that socio-economic development in Pakistan can be enhanced by a combination of technology and women empowerment.

Introduction

Vulnerability is described as the characteristics and circumstances of a community, system or asset that make it vulnerable to the destructive effects of a risk (UNISDR, 2009). Vulnerability discusses the inability of a person, group or a social system to endure the effects of a hostile environment. According to World Bank, world population comprises of 7.53 billion, among them 3.73 billion are female while 3.8 billion are male. The total labor force around the world is 3.45billion which contains 39.29%female as the percentage of total labor force (ILO, 2018). On the other hand, 1.78 billion (23.6%) population lives in south Asia, which consist of 48.46% female and 51.54% of male. In South Asia total percentage of female population is 48.5%, 46.9%, 51.5%, 48.6%, 48.2%, 43.1%, 51.9% and 49.6% in Afghanistan, Bhutan, Nepal, Pakistan, India, Maldives, Srilanka and Bangladesh, respectively (WB, 2017). Out of them, labor force participation as percentage of total population is 56.93% in which 30% are female. The female labor force participation in South Asia was 20.26%, 60.44%, 85.39%, 26.29%, 28.69%, 44.89%, 11% and 34.75% in Afghanistan, Bhutan, Nepal, Pakistan, India, Maldives, Srilanka and Bangladesh, respectively (WB, 2017).

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The South Asian region is primarily rural (70%), densely populated (one-fifth of all humanity), poor (40% of world's poor), pointed by its inequalities on the basis of class, belief, ethnicities and more complicated by gender based inequalities (Doner, Ritchie, & Slater, 2005). South Asian countries are tied with the common difficulties of high incidence of poverty, political instability, low economic growth, low literacy rate, extensive malnutrition, gender disparities and environmental degradation which are attributed to the low level of income and expenditure, high mortality and illness, pitiable nutritional status, low educational attainment, external shocks and exclusion from economic, social and political processes.

The condition of women participation is even more inadequate in Pakistan as compared to other countries in South Asia. Only 26.29% of female participation in labor force (ILO, 2018). Economic development is probable when all human beings are free in their choices. When any society confines the freedom for women, this will reason of stagnant growth of economy furthermore, income disparities, unemployment, poverty and illiteracy (Sen, 1990).

Universally, Women consist of world's half population and yet indicate an incredible 70% of the world's poor (WB, 2017). 100 million missing women" book of Amartya Sen's, which emphasized that millions of women are disappeared from the world due to inequality and social exclusion (Sen, 1990). This notion is still existing in the today's world of inequality. The condition of socio political influences is still disturbing in many countries of the world particularly on female side due to inequality. Developing countries are the special case of low literacy and low female labor force participation, low life expectancy and injustice in female side.

Gender equality in term of economic aspect means equal access of both male and female with the same level of skills to job opportunities, wages, education, health and political participation (IMF staff discussion note 2013). Evidence shows that in many developing nation's massive disparities exist between males and females in identical rights and opportunities perspective (Kiriti & Tisdell, 2003). The respect of females is more vulnerable comparative to males in developing nations (Dollar & Gatti, 1999). There are many dimensions that are helpful in impacting women vulnerability. Health, education, political participation, decision making and labor force involvement between females can be improved by more open international influences (Gray, Kittilson, & Sandholtz, 2006). Tis study identify that women empowerment are most essential for sustainable development. In recent times, the significance of female's involvement in decision-making has been accepted at the international level. However, 143 of 195 states have constitutionalized gender equality, every state stagnantly suffers some form of straight and ancillary inequality against females (UN Global Goals, 2016).

According to world development report (2016) use of new technologies show an increasing trend in Pakistan. The study shows that use of technology is inclining with the passage of time and technology has ability of spreading information so we can use it positively for betterment of society. Information and communication technologies (ICTs) can help to reduce women vulnerability.

Information and communication technology is a word that refer to the sorts of technology that are used precisely for communications. It is similar to information technology, but Information and Communication Technology emphasis more on technologies that deals with communication, like internet, mobiles, and wireless networks among other things (Young, 2012).

Information and Communication Technology has confirmed to be the single most influential tool for expansion in the past ten years (Hafkin & Taggart, 2001). It has become the association of communication among nations, tool for generating a common linguistic that unlocks opportunities, ties people, and creates networks for country and personal development (Geldof & Unwin, 2005). Today, Information and Communication Technology is the most efficient instrument in the hands of women to empower them, to enhance their participation in a variety of productive fields and provide them with an avenue to precise the development of their capacities and personalities (Huyer & Sikoska, 2003). Information and Communication Technology can permit them to take part effectively in various development fields, including decision making and planning at the family, societal and institutional levels (Gurumurthy, 2004).

ICT has great impact on improving knowledge through new advance technology use. ICT empower women in several fields of life such as education, political, technological and economical. Some of disempowerment because of core and peripheral reasons (Beena & Mathur, 2012). Media has great impact on women empowerment in economic terms. Electronic media like social media plays are important to public institutional participation in every field of life (Narayana & Ahamad, 2016).

The primarily purpose of inclusive growth is to provide equal opportunities to all. Asian Development Bank states that inclusive growth derives from wide access to sustainable socio economic opportunities for more people, all being over in fair environment. Inclusive growth is such growth through which each and every sector of people should be benefited.

The lack of improvement on gender equality likely at the heart of the disappointment to advance on sustainable development. If women were in further decision-making roles and productive, we could be affecting faster and more undoubtedly towards sustainability in the social, economic and environmental sense. Sustainable improvement is a political perception because it is all about good and worthy governance, which will be inflexible to attain until we get nearer to the gender parity (Stevens, 2010)

Women in developing countries are not enjoying equal rights to men. Women have no power of decision making and earning, they are pushing back with their families, relatives and societies. Women are more vulnerable than men. In Pakistan women participation in agriculture, industry and services as compared to males are 72.81%, 14.37% and 12.82% respectively (WB, 2017). Largest portion of female belongs to agriculture sector, according to the UN women,2018 report, the proportion of unpaid working women in agriculture are much higher than other zones as 67% of them are associate in agricultural work in diverse areas including 46% farming, 60 % in livestock.

Significance of this study is to analyze the role of technology in our lives and how they help us to tackle serious issue of women vulnerability, which should be helpful for policy making and build up strong institutions. Combination of technology and women empowerment will lead towards socio economic development in Pakistan. This study will evaluate the role of ICT in reducing women vulnerability at household level.

The main purpose of this study to find out the impact of ICT's on women Vulnerability: An evidence from micro data, under this following objectives are measured.

- To measure the women vulnerability index by using PCA.
- To measure the ICT index by using PCA.

- To examine the relationship between ICT and women vulnerability at household level.
- To examine the relationship between income and women vulnerability.

Research Methodology

The study used PDHS (Pakistan Demographic and Health Survey) 2017-18, succeeding the 1990-91 and 2006-07 PDHS surveys. The PDHS be responsible for an inclusive indication of maternal, child health issues and population in Pakistan. PDHS collected evidence on Vital demographic indicators, predominantly under-5 mortality rates and fertility, at national level, for rural and urban areas, and within the country's eight areas. The statistics also delivers information on indicators related to the Sustainable Development Goals.

Since 1984 Demographic and Health Surveys perceived and funded chiefly by U.S. Agency for International Development [USAID] has collected and distributed high quality information that deliver critical awareness for decision makers to monitor, plan and evaluate, health, population and nutrition programs. The DHS project staff has assisted conduct 260 surveys in over ninety developing countries. Extensively cited by national leaders and governments, donor agencies and international and USAID, DHS outcomes have played a crucial role in national health system strategy and in policy development. The mission uses systematic survey methods and questionnaires across countries to measure important indicators including child mortality and infant, family planning use, fertility, maternal health, malnutrition levels and child immunization.

DHS are considered to cover the countrywide population having sample sizes of among 5000 and 30 000 households. From the household schedule, individuals are acknowledged to conduct surveys in addition to household surveys that is men aged (15–59) years, women aged (15–49) years and children aged (0–59) months.

A sample of national illustrative household is 14,000. A sample consist of rural & urban population of provinces of districts in Pakistan.

Table- 4.1: Sample allocation of household

Sample allocation of household by province, Pakistan 2017 - 18			
Region	**Urban**	**Rural**	**Total**
Punjab	1,624	2,380	4,004
Sindh	1,792	1,176	2,968
KPK	980	1,568	2,548
Baluchistan	924	952	1,876
Islamabad	980	364	1,344
Gilgit Baltistan	644	616	1,260
Pakistan	6,944	7,056	14,000

Source: (PDHS,2018)

Demographic Health Survey respondents are carefully chosen by means of a two-stage sampling procedure, utmost DHS (demographic health survey) are bedded by rural and urban location or by geographical area. Approximately all populations that are demonstrative of the whole state or area of curiosity, with a few immunities made for regions that have unusually dispersed populations or remote locations. In DHS a multistage sampling technique is accepted, with main geographical regions, being arbitrarily selected and taking possibility of selection

based on the stratification characteristics and unit's population. Survey field squads then official visit the selected geographical regions, where a comprehensive listing of residences and households are assembled. From these lists, by systematic sampling (20–30) households are selected. Nominated households are go to see by a competent interviewer, who conducts a short household interview and finalizes a household schedule and detects eligible women (15–49) years, for a specific interview. The parallel procedure is monitored to classify men (aged 15–54 or 15–59 years), who are suitable for an interview in nations take part in the men's survey section, while in some states, men's statistics are controlled from a sub-sample of either 1/3 or 50 percentage of households nominated for the survey.

Index Measurement: Women Vulnerability Index

Women vulnerability index consist of five variables which are extracted from Pakistan Demographic Health Survey i.e. Health care decision (People who generally decides on respondent's health care), Women education (women highest class completed), Husband choosing (Woman have to say in choosing husband), Decision of visit (Individual who generally decides on visits to relatives and family) and Decision of purchase (People who generally decides on large household purchases) (Idrees & Baig, 2017) and this index will be computed by PCA. The Principal Component Analysis method can be used efficiently to attain the most suitable indicators for the weights of anticipated indices & sub-indices, such that extracted the first principal components would describe foremost total variance of percentage taken by this component. PCA is a multivariate method that examines numerous intercorrelated dependent quantitative variables. The objective is to abstract the imperative information to symbolize a new orthogonal variables called principal components. Thus, the goals of the Principle component analysis are diminish dimensionality the data and to make a new computable index (Abdi & Williams, 2010). PCA is an arithmetical process that drives an extraneous alteration to modify a set of considerations probably linked variables are set of principles of linearly uncorrelated variables called principal components. In PCA we will give weightage according to the preference of indicator (Smith, 2002). The study will measure women vulnerability by using women empowerment index (Idrees & Baig, 2017) and this index will be computed by PCA.

The simple equation of Principal Component Analysis is, in matrix code, assumed by:

$$Y = W'X \tag{1}$$

W represents, coefficients of matrix which is measured by principal component analysis The equation can also write as:

$$Y_{ij} = W_{1i}X_{1j} + W_{2i}X_{2j} + \cdots + W_{pi}X_{pj} \tag{2}$$

In this equation, the weighted average given to factors of the unique variables. Weights, W, are built so variance of Y_1, Var (Ogbomo, 2011), is maximized. So that Variance (Y_2) is maximized and that the link between Y_1 & Y_2 is zero. The weights of matrix, W, is considered from the matrix of variance and covariance, S. This matrix is calculated by using the formula:

$$S_{ij} = \frac{\sum_{k-1}^{n}(x_{ik}-x_i)(x_{jk}-x_j)}{n-1} \tag{3}$$

Later, that equation might be adjusted both to be strong to outliers and to compact with misplaced values. The single value decomposition of S delivers the explanation to the PCA problem. It may be possibly defined as:

$$U'SU = L \tag{4}$$

U is the matrix of eigenvectors of S and L is a diagonal matrix of the eigenvalues of S. W is calculated from L and U, using the association:

$$W = UL^{-1/2} \tag{5}$$

It is fascinating to note that W represents simply the eigenvector matrix U, scaled so that the variance of each factor, y_i is one. The correspondence between an ith factor and the jth original variable may be calculated using the formula:

$$r_{ij} = u_{ji} \, s \sqrt{jj} l_i \qquad (6)$$

Here l_i is a diagonal element of L, u_{ij} is an element of U, and s_{jj} is a diagonal element of S. The relationship is known as the factor loadings and are delivered in the Factor Loadings report. In the correlation matrix, R is used instead of the covariance matrix S, the equation for Y must be modified. The new equation is:

$$Y = W'D^{-1/2} X$$

where D is a diagonal matrix, made-up of the diagonal fundamentals of S. In this situation, the formula of correlation may be disentangled since the s_{jj} are equal to one.

For making women vulnerability Index, we run PCA for the variables regarding women vulnerability index, the first component describes the maximum amount of variance taken from the indicators, comparative to additional components. After this, we add the value variables of component one then, subtract each value from the total value of the component. In this method we get the weight of each indicator, after that multiply each value of weightage with original variables of the index respectively. So in this we can see the importance of each variable in the index. All data are computed from Pakistan Demographic Health Survey (2012-13).

Information and Communication Technology (ICT) Index

Information and Communication Technology index comprise of four variables which are take out from Pakistan Demographic Health Survey (PDHS) that is, Mobile (Household has Mobile), Telephone (Household has Telephone), Computer (Household has Computer) and Internet (Household has internet connection) (Idrees & Baig, 2017) and this index was computed by principal component analysis.

In this technique firstly, we run PCA for the variables regarding women vulnerability index, the first component describes the maximum amount of variance taken from the indicators, comparative to additional components. After this, we add the value variables of component one then, subtract each value from the total value of the component. In this method we get the weight of each indicator, after that multiply each value of weightage with original variables of the index respectively. So in this we can see the importance of each variable in the index. All data are computed from Pakistan Demographic Health Survey (2018-19).

Asset Index

Asset index comprise of six variables which are take out from Pakistan Demographic Health Survey (PDHS) that is, six different variables that are Cycle (Household has cycle), Cattle (household has cattle), Car (household has car), Bed (household has bed), Cooler (household has cooler), Scooter (household has scooter), Air Conditioner (household has AC) and TV (household has TV). (Idrees & Baig, 2017) and this index was computed by principal component analysis. In Principal component analysis we will give the weightage according to the preference of indicator (Smith, 2002). The study will measure women vulnerability by using women empowerment index (Idrees & Baig, 2017).

In this technique firstly, we run PCA for the variables regarding women vulnerability index, the first component describes the maximum amount of variance taken from the indicators, comparative to additional components. After this, we add the value variables of component one then, subtract each value from the total value of the component. In this method we get the weight of each indicator, after that multiply each value of weightage with original variables of the index respectively. So in this we can see the importance of each variable in the index. All data are computed from Pakistan Demographic Health Survey (2018-19).

Model and Data

This study will investigate the impact of information and communication technologies on women vulnerability at household level in Pakistan by using microdata of PDHS 2017-18. The study will measure women vulnerability by using women empowerment index (Idrees & Baig, 2017). The study will find the relationship between ICT's and women vulnerability and other controlled variables will help to generate basic model.

$$WVi = \beta_0 + \beta_1\, ICT_i + \beta_2\, asset_i + \beta_3\, Resp\_EMP_i + \beta_4\, hh\_membr_i +$$
$$\beta_5\, resp\_spend_i + \beta_6\, Wed + U_t \qquad\qquad (7)$$

In this model, i subscript represents different cross sectionals. In this study the dependent variable is Women vulnerability and independent variable is ICT information and communication technologies. ICT's will be measured by access of internet connection and mobiles. Resp_EMP is the employment, employment includes that how many women are employed in each household. Hhold_member stands for household member which means that how many members are in each household. Wed stands for women education which means that how many women in each household have access to education of primary, secondary and tertiary level. All data were computed by Pakistan demographic health survey 2017-18.

Estimation Procedure

PDHS (Pakistan Demographic and Health survey 2017-2018) used for constructing Women vulnerability index, ICT index, Asset index and other controlled variables for Pakistan. In this study, cross sectional data is used.

Cross-sectional study covers, observing at people who differ on one main representative at one particular period. Data is composed at the same time period from individuals who are similar in other features but diverse in a crucial factor of awareness. The simplest one (Ordinary least squares) OLS regression is a generalized linear modelling technique that used to model a solitary retort variable which has been documented on minimum interval scale. This study calculated the weights according to importance or value of the relative indicator, and for that purpose principal component analysis technique is used. In this technique, take the 1st component of index, then take the square of each indicator after that sum up those value. Then those values multiply with the recoded indicator after that we get the range of relative index. In this way this study generates the Women vulnerability index, asset index and ICT index.

The method may be useful to multiple, single explanatory variables and too categorical explanatory variables that have been appropriately coded. Model is selected which is most suitable, in this regard, F-test, Variance inflation factor are used. F-test described about the significance of model.

Results and Discussions
Descriptive Statistics and Econometric Methodology

The most adapted methodology is that which starts with some descriptive statistics of these seven variables from the PDHS data sets (Table.1), measures the role of ICT on women vulnerability.

Table 1 Descriptive statistics

Variables	Observations	Mean	Std. Dev.	Min	Max
Women Vulnerability index	6,166	.2748176	.3858	0	1
ICT index	13,813	.8276696	.2945	0	1
Respondent employment	19,560	---------	.3601	0	1
Household members	13,850	7.52906	5.196	1	48
Respondent spending decision	2,392	---------	.3859	0	1
Women education	13,015	--------	0.676	1	3
Asset index	13,064	3.105335	1.444	1	5

The total observations of women vulnerability index are 6,166 because only 6,166, and 13,813 observations of Information and communication technology index use as a cross sectional data from Pakistan Demographic and Health Survey, same time period of 2012-13. Because number of observations are varying due to the respondent's response.

The outcomes of the above said table illustrates the descriptive statistics of women vulnerability index that is mean and its deviancy from mean. The minimum and maximum value of women vulnerability index fulfill boundaries in the responses which were (0,1) respectively, that presented how much values were spread out. The consequences showed a mean value of women vulnerability index is 0.27, standard deviation 0.38 stated the deviancy of responses from its mean.

ICT index, mean and its deviancy from mean. The minimum and maximum value of Information and Communication index fulfill boundaries in the responses which were (0,1) respectively, that presented how much values were spread out. The consequences showed a mean value of ICT index is 0.82, standard deviation 0.29 stated the deviancy of responses from its mean.

Asset index, mean and its deviancy from mean. The minimum and maximum value of asset index fulfill boundaries in the responses which were (0,1) respectively, that presented how much values were spread out. The consequences showed a mean value of asset index is 3.10, standard deviation (1.44) stated the deviancy of responses from its mean.

Household members, mean and its deviancy from mean. The minimum and maximum value of household members fulfill boundaries in the responses which were (1 and 48) respectively, that presented how much values were spread out. The consequences showed a mean value of household members are 7.52, standard deviation (5.19) stated the deviancy of responses from its mean.

Respondent spending decisions, average and its deviation from mean value. The maximum and minimum value of respondent spending decisions gratification extremities in the responses which were 0 and 1 respectively that showed how values were dispersed out. The value of standard deviation (.39) expressed the deviation of responses from its mean, women education means and its deviancy from mean. The minimum and maximum value of women education fulfill boundaries in the responses which were (0,1) respectively, that presented how much values were spread out. The consequences showed the standard deviation 0.68 stated the deviancy of responses from its mean
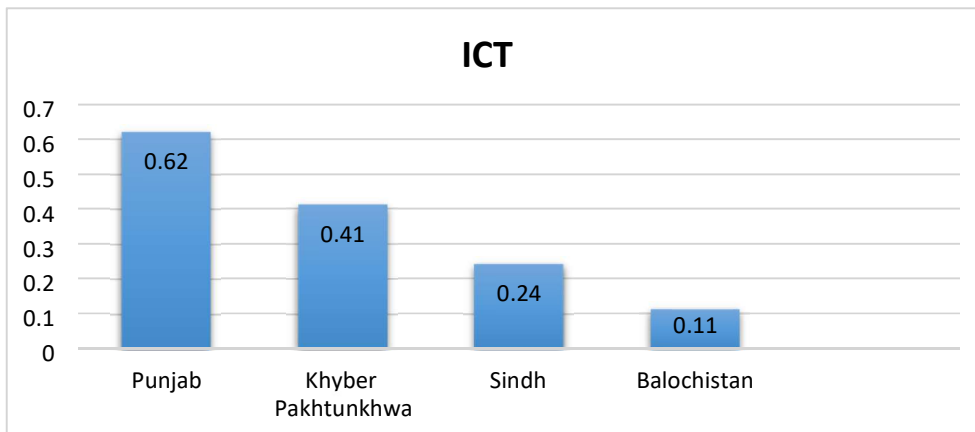
Source: (Authors Own Calculation)
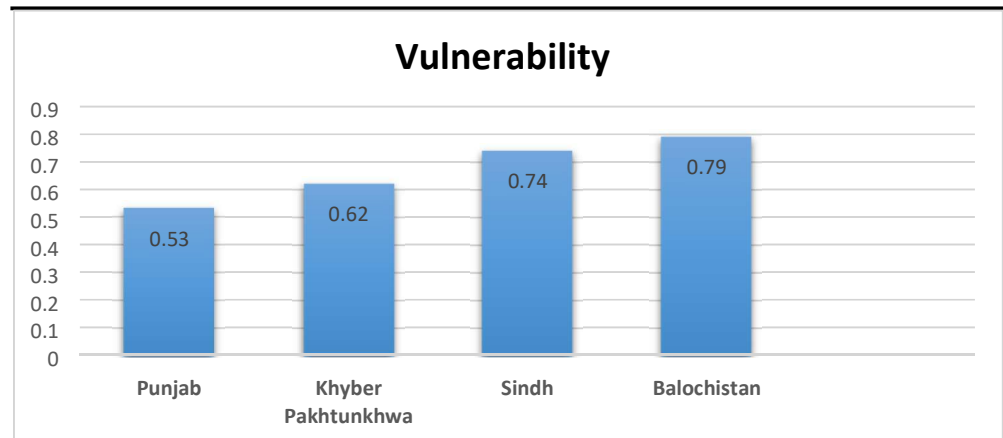
Table 2. Correlation Matrix						
	Wm_indx	ICTindex	Resp_emp	Hhmember	Spend_Dresp	assetindex
Women vulnerability index	1.0000					
ICT index	0.0491**	1.0000				
Respondent employment	-0.1133**	-0.0598**	1.0000			
Household members	0.0302**	0.0274**	-0.0593**	1.0000		
Respondents Spending decision	-0.0790**	-0.0150*	0.0708**	0.0365**	1.0000	
Asset Index	0.2582**	0.1924**	0.0190**	-0.0094**	0.0067*	1.000

Figure 1. Women Vulnerability Index Between Region

women vulnerability index range is (0-1), "0" empowered "1" represents "vulnerable". Figure1 shows that in Punjab, women vulnerability is 0.53, Sindh 0.74, Khyber Pakhtunkhwa 0.62, Balochistan 0.79 and so according to this situation, in Punjab women vulnerability is less because it is so closely related to "0" and Balochistan is even more vulnerable condition its value is 0.79 which shows that it is highly closer to 1.

Figure-2: Information and Communication Technologies (ICT) Index Between Region

ICT

Region	ICT
Punjab	0.62
Khyber Pakhtunkhwa	0.41
Sindh	0.24
Balochistan	0.11

Source: (Authors Own Calculation)

The range of ICT index is (0 to 1) "0" means household has no access of (internet, mobile, telephone, computer) while, "1" represents that household has access. The figure elaborates that value of different provinces. Punjab region is less vulnerable regarding the access of ICTs as compare to the other regions.

Figure 3: Gender Proportion Among Regions

Gender
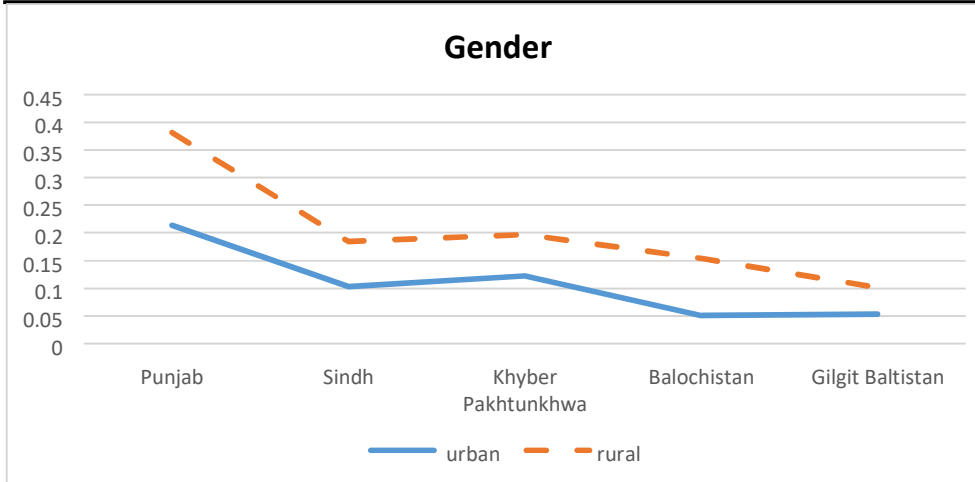
Source: (Author's Own Calculation)

Regression Results

The result shows that ITindex, resp_emp, spend_Dresp and asset index have negative and significantly related to women vulnerability index(Wm_indx). whereas, household member (hhmember), women education (women_edu) have positively and statistically significant to Women vulnerability index.

Women vulnerability index	Coefficients	Significance	Robust Std. Err.
ICTindex	-0.0673849**	0.001	.0234368
Respondent Employment	-0.0137359**	0.000	.0028713
Household member	0.0017113**	0.001	.0040381
Respondent spending decision	-0.0218429**	0.000	.0057321
Women Education	0.1129286**	0.000	.0029808
Asset index	-0.2696803**	0.010	.1317773
Constant	0.1396416**	0.000	.0110128

R-squared = 0.6843
Prob > F   = 0.0000
Mean VIF =1.16
Note: If mean VIF >10, multicollinearity exists

Information and communication technology index has negative relationship with Women Vulnerability index, which means if information and communication technologies increases, women vulnerability will be reduced. The role of ICTs (e.g. Internet, Telephone, Computer, Mobile) to eliminate poverty among women in nurturing efficiency and productivity in the agricultural, industrial and many other sectors. (Khaliq, et al., 2016). ICT is the most effective tool in the hands of women to enable them to extend their participation in a variety of productive fields and provide them with an avenue to express the development of their personalities and capacities (Huyer & Sikoska, 2003). ICT can enable them to participate effectively in numerous development fields, including planning and decision making at the family, institutional, and societal levels (Gurumurthy, 2004).

Respondent employment negatively associates with women vulnerability; it depicts that if the respondent(women) is employed fully or seasonally then women vulnerability also drops. ICT has great impact on refining knowledge through new advance technology use. ICT empower women in numerous fields of life i.e. education, political, technological and economical. Some of disempowerment because of core and peripheral reasons (Beena & Mathur, 2012). Media has excessive influence on women empowerment in economic terms. Electronic media like social media plays are important to public institutional participation in every field of life (Narayana & Ahamad, 2016).

Household members are increases then women vulnerability also increases, this result shows that when there will be greater number of family members in a household, Differences in family structures related with an increase or decrease in the size and dependency intensities of the aging population, have sturdily affected family life in both financial and emotional aspects. (Pavarini et al., 2009).

Lastly, all variables are free from heterogeneity because of robustness, to secure from heterogeneity in the model we use robust function, in this way our model free from heterogeneity.

For Multicollinearity, this study uses variance inflation factor, so according to this there is no multicollinearity among the independent variables, if mean variance inflation factor (*VIF*) is greater than 10 then multicollinearity exists.

Conclusion

The aim of this study is to measure the women vulnerability in Pakistan and to empirically investigate the impact of ICT on women vulnerability at household level. This study measures the women vulnerability by using women vulnerability index by using PDHS 2012-2013 data. The study will measure women vulnerability by using women empowerment index (Idrees & Baig, 2017).

Women vulnerability index consist of health care decision, Women education, husband choosing, decision of visit and decision of purchase (Idrees & Baig, 2017) and this index is computed by principal component analysis. PCA is an arithmetical process that drives an extraneous alteration to modify a set of considerations probably linked variables into a set of principles of linearly uncorrelated variables called principal components. In Principal component analysis we will give the weightage according to the preference of indicator (Smith, 2002). For that purpose, indices were made-up by using principle component analysis (PCA).

This study used OLS regression analysis to identify this impact. Study reveals that ICT has a negative and significant impact on the women vulnerability. Since women empowerment and economic development are closely related (Nikulin, 2017). We should be concern about reducing vulnerability of women. Therefore, to minimize the women vulnerability focus should be given to the development of ICT**.** Respondent employment, Respondent spending decision and asset index have negative and significantly related to women vulnerability index. Whereas, household members (hhmember), women education (women_edu) have positively and statistically significant to Women vulnerability index.

Study concluded that increase in ICT access causes lower women vulnerability and suggested that ICT can enable them to participate efficiently in numerous field, including planning and decisions making at the family, institutional and societal level. On the other hand, household member causes increase in women vulnerability in Pakistan. It also helps to analyze the role of technology in our lives and express how they may help us to tackle serious issues like women vulnerability, which could help in policy making and building strong institutions. ICT can empower rural women economically by eliminating poverty, decreasing trade distortions, increasing productivity, empowering weak segments and obtaining information regarding market prices etc. Study suggested that socioeconomic development in Pakistan can be enhanced by a combination of technology and women empowerment.

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