

UNVEILING WOMEN EMPOWERMENT: A COMPREHENSIVE INDEX FOR PAKISTAN

Madiha Mateen

National College of Business Administration and Economics Lahore, Pakistan

madihamateen01@gmail.com

Received: 21 December, 2023 Revised: 29 January, 2024 Accepted: 05 February, 2024 Published: 16 February, 2024

ABSTRACT

The concept of Women Empowerment in social development has garnered significant attention over the last two decades. The present study contributes to this discourse by constructing a Composite Women Empowerment Index (CWEI) utilizing data from the Pakistan Demographic and Health Survey (PDHS) conducted in 2017-18. This index comprehensively encompasses all possible dimensions of women empowerment, including economic, socio-cultural, familial, and psychological aspects in context of Pakistan. The Composite Women Empowerment Index (CWEI) is constructed using the Principal Component Analysis (PCA) method. The outcomes affirm the psychological empowerment model, showcasing positive and significant interrelationships among familial, economic, socio-cultural, and psychological empowerment dimensions. The findings emphasize that advancements in any one of these dimensions contribute to an overall increase in women empowerment across various aspects.

Keywords: Women, Empowerment

INTRODUCTION

Women empowerment involves the "transformation of power dynamics that impose limitations on women's options and autonomy, thereby negatively impacting their health and well-being" (Sen, 1993). The most detailed and comprehensive exploration of women empowerment in existing development literature can be found in "Development as Freedom," where development is defined as the broadening of people's choices (Sen, 1999). Empowerment is characterized as the enhancement of one's competence and capacity to make proactive life choices, particularly in situations where one's capabilities have been previously restricted (Kabeer, 1999). Recent literature has employed various measures to assess women empowerment, and the interpretation of the term varies depending on the economic, political, and social context. It involves the expansion of liberty in choices and actions that can improve women's power, decision-making, and control over resources (Kabeer, 2001).

The acknowledgment of women empowerment as a pathway to achieve developmental objectives is

gaining prominence. Recognizing its significant role in both human and economic development, scholars have increasingly focused on the theoretical and empirical aspects, as well as influential factors and measurement challenges associated with women empowerment since the late 20th century (Malhotra et al., 2002).

An additional aspect in the existing literature presents a unique perspective on women empowerment that goes beyond mere "control over resources." However, measuring it has proven to be elusive. Various studies have employed diverse proxy measures for women empowerment, such as income, education, and employment status (Allendorf, 2007; Shroff et al., 2011; Bhagowalia et al., 2012; Mateen et al., 2022). More recent research has delved into direct and specific indicators of women empowerment, such as examining domestic violence (Ackerson and Subramanian, 2008; Asling-Monemi et al., 2008; Bhagowalia et al., 2012) and assessing decision-making or bargaining power

(Allendorf, 2007; Shroff et al., 2011; Bhagowalia et al., 2012).in this research study.

The Composite Women Empowerment Index (CWEI) functions as a measure for assessing women empowerment, with its dimensions derived from conceptualizations and definitions found in prior literature, including works by Malhotra et al. (2002). The index encompasses all conceivable dimensions of women empowerment, specifically familial, economic, socio-cultural, and psychological empowerment at the household level, while political and legal dimensions are considered at national and regional levels.

Table 1 outlines the conceptual framework guiding the construction of CWEI, employing multiple measures for each dimension. The dimensions are explained as follows:

Familial Empowerment: This pertains to women's involvement in decision-making within their families, encompassing choices related to contraceptive use, healthcare, and freedom from domestic violence. The latter includes dimensions such as justifying beating if the wife neglects in-laws, goes out without informing the husband, neglects children, argues with the husband, or refuses to have sex, and if the wife burns food.

Socio-Cultural Empowerment: This focuses on women's ability to develop a sense of liberty and confidence to navigate associations and organizational networks crucial for their well-being. It involves physical mobility, such as visiting family

members and healthcare centers, recognizing that limited social mobility can hinder better employment opportunities.

Psychological Empowerment: This comprises self-efficacy, self-esteem, psychological well-being, awareness of discrimination, the ability to mobilize, and common acknowledgment of women's authority. This dimension includes awareness and opinions about women's fundamental rights, their capacity to handle domestic shocks, and how psychological empowerment contributes to confidence, bargaining power, freedom of choices, and managing competencies within the family.

Economic Empowerment: This encompasses women's control over resources, economic contributions to household well-being, access to socioeconomic resources, and asset ownership. It extends to their earning capacity, bargaining power, control over resources, and participation in household decision-making, thereby reducing economic dependence. Key indicators include inherited land and human capital before marriage, recognizing that assets transferred during marriage significantly impact economic value.

All these dimensions are treated as binary variables in the construction of CWEI, providing a comprehensive assessment of women empowerment across various aspects of their lives.

Table 1 below presents the description of variables used in these dimensions.

Table 1
Variables Used for the Dimensions of CWEI

	Indicators:	Category 1	Category 2
	Economic Dimension:		
1	Person responsible for determining how respondent's earnings are spent	Women	Someone else
2	Person in charge of making major household purchases	Women	Someone else
3	Person who typically decides how the husband's earnings are utilized	Women	Someone else
4	Ownership of assets / inherited land	Yes	No
5	Human Capital at the Time of Marriage	Yes	No
	Familial Dimension:		
1	Individual responsible for making decisions regarding respondent's healthcare	Women	Someone else
2	Decision-maker regarding contraception usage	Women	Someone else

3	Attitude towards domestic violence		
a	Justification for beating if wife goes out without informing husband	Yes	No
b	Justification for beating if wife neglects children	Yes	No
c	Justification for beating if wife argues with husband	Yes	No
d	Justification for beating if wife refuses to engage in sexual relations with husband	Yes	No
e	Justification for beating if wife burns food	Yes	No
f	Justification for beating if wife neglects in-laws	Yes	No
Socio-cultural Dimension:			
1	Individual usually making decisions regarding visits to family or relatives	Women	Someone else
2	Visited a health facility in the last 12 months	yes	No
Psychological Dimension:			
1	Person responsible for determining how respondent's earnings are spent	Women	Someone else
2	Whether respondent works for the family, others, or themselves	herself	Someone else
3	Influence in choosing spouse	yes	No
4	Whether respondent earns more than husband/partner	yes	No

The calculation of the Composite Women Empowerment Index (CWEI) involves a dynamic and systematic process. Initially, an intra-variable association of indicators is conducted to ensure that all indicators within a specific dimension represent the same fundamental concept. This step is crucial to guarantee that indicators measuring different concepts are not combined.

Subsequently, the indicators from all dimensions are aggregated and standardized using Principal Component Analysis (PCA). PCA is employed to transform the set of correlated indicators into a set of uncorrelated variables, known as principal components. This step allows for the creation of a comprehensive index that captures the variability in women empowerment across various dimensions, providing a more accurate and nuanced representation of the overall empowerment status.

The procedure known as Principal Component Analysis (PCA), initially described by Pearson (1901) but often attributed to Hotelling (1933), is employed to transform a large set of indicators in a dataset into a more coherent and compact set of uncorrelated (orthogonal) factors referred to as

Principal Components. These components effectively capture much of the variance present among the original indicators. Each principal component is a linear weighted combination of the initial indicators.

The arrangement of these components is such that the first component explains the maximum potential variation within the original indicators. Subsequently, the second component is entirely uncorrelated with the first, elucidating the maximum variation not accounted for by the initial component. This process continues with each subsequent component explaining the maximum variation not covered by the preceding ones.

To aggregate and standardize all dimensions, the First Principal Component (FPC) is extracted, representing a weighted sum (factor loadings) of the indicators that explains the majority of the variation within a specific dimension. For ease of interpretation, the FPC is then rescaled to lie between 0 and 1. This entire process aids in condensing the information from a multitude of indicators into a smaller set of uncorrelated variables, facilitating a

more manageable and meaningful representation of the underlying structure in the data.

Several socio-cultural, demographic, familial, and economic measures were used to ensure the inclusion of a multi-dimensional approach to understand women empowerment in all aspects. Based on previous literature, 14 theoretically essential measures were selected from PDHS for the current study.

Data of women aged 15–49, married and employed, from PDHS, on 4, 2, 2, 6, and 5 items of psychological, socio-cultural, familial, domestic violence, and economic dimensions of women empowerment, respectively, were subjected individually to exploratory factor analysis by using Varimax rotation method. Exploratory Factor analysis was generated by Principal Component Analysis (PCA). By following the technique, the Kaiser (1960, 1991) criterion, 6 interpretable and well-defined factors were selected out of 18 factors included in EFA. The decision regarding holding the factors was taken from the scree plot, which has

shown the Eigen value is greater than 1.0. Factor loadings represent the theoretical significance of the items. The Eigen values of the selected factors ranged between 2.3 to 10.6, and 70.04% variance was accounted for by the loading factors.

The study used a graphical approach, known as Catell's (1966) scree test (figure 1). The scree plot represents plots of all eigenvalues of the factor loadings, demonstrating the number of factors on the x-axis and the eigenvalues on the y-axis. A smooth downward-sloping curve, starting high from the left, dropping quickly, and then becoming flat at some point is observed. This is because the first component typically describes considerable variability, while the next few components describe moderate variability, and the latter components describe a small change in the whole variability. One can review to find the point where a smooth decline of eigenvalues seems to level off. To the right side of this point, only 'factorial scree' is found. After investigating the scree plot, five factors were extracted for the given analysis.

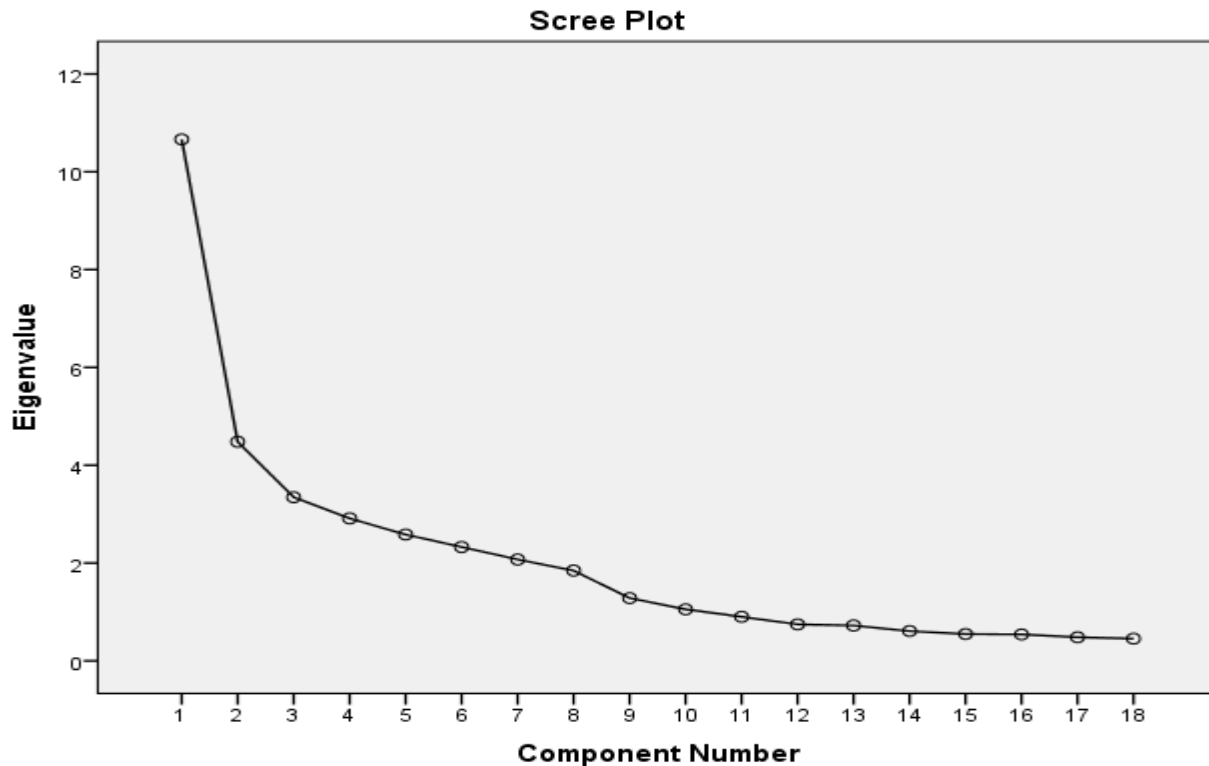


Figure 1

Table 2
KMO Measure of Sampling Adequacy and Bartlett’s Test of Sphericity

KMO Measure of Sampling Adequacy	0.8150
Bartlett’s Test of Sphericity	
Chi-Square	3145.90
Df	153
Sig	0.00

In the present study, the Kaiser-Meyer-Olkin (KMO) test was employed to assess multicollinearity in the data, determining the appropriateness of factor analysis (see Table 2). The obtained KMO value in our study is 0.815, suggesting that factor analysis can be carried out with confidence.

Additionally, an additional test evaluating the strength of the association among variables was

performed using Bartlett’s Test of Sphericity (1954). This test assesses the null hypothesis that the variables in the correlation matrix are not correlated. The results of our estimations exhibited a significance level of 0.00, leading to the rejection of the null hypothesis (the p-value should be less than 0.05 to reject the null hypothesis). Therefore, the association among variables is deemed strong.

Table 3
Results of PCA; Varimax Rotation Factor Matrix

Indicators:	Factor 1	factor 2	factor 3	factor 4	factor 5	factor 6
Justification for beating if wife neglects in-laws			.93			
Inherited land		.13				
Health decision-making		.64				
Contraceptive decision-making					.08	
Employment status					.89	
Justification for beating if wife goes out without informing husband	.88					
Justification for beating if wife neglects children	.89					
Justification for beating if wife argues with husband	.89					
Justification for beating if wife refuses to have sex with husband	.89					
Justification for beating if wife burns food	.87					
Human capital before marriage						.98
Relative income		.23				
Visit to health center during the last 12 months		.43				
Decision regarding family visits		.79				
Decision regarding household purchases		.79				
Decision regarding women’s earnings				.89		
Decision regarding husband’s earnings	.61					

Decision regarding choosing spouse			.43			
Percent of variance explained: 70.04%	28.39	11.9	8.90	7.75	6.87	6.19

Source: estimated results using DHS data

The results of Principal Component Analysis (PCA) with Varimax Rotation are detailed in Table 3, indicating that six factors collectively account for 70.04% of the total variance in the dataset. Factor 1, which incorporates variables related to justifications for domestic violence and decision-making about the husband's earnings, exhibits strong positive loadings. These loadings, derived from orthogonal rotation, represent correlation coefficients among the variables, with higher values indicating a stronger association with opinions on domestic violence. Factor 1, constituting 28.39% of the total variance, serves as an indicator of psychological empowerment, reflecting attitudes towards domestic violence.

The second factor, contributing 11.9% to the total variance, displays higher positive loadings for variables such as inherited land, health decision-making, women's relative income, decisions regarding family visits and purchases, and visits to health centers. This factor encompasses dimensions of socio-cultural and economic empowerment, as well as familial empowerment and psychological empowerment.

The third factor, explaining 8.95% of the total variance, demonstrates positive loadings for justifications of domestic violence and decisions regarding spouse selection. The fourth factor, accounting for 7.75% of the total variance, exhibits positive loadings for decisions related to women's earnings. The fifth factor, contributing 6.8% to the total variance, represents loadings for decisions regarding contraception and women's employment. Finally, the sixth factor, which accounts for 6.19% of the total variance, describes loadings related to human capital before marriage.

To calculate the Composite Women Empowerment (CWE) index, factor scores obtained through regression (the component method) are used. The six factors collectively explain 70.04% of the total variance, and their significance in calculating women empowerment varies. To develop a Non-standardized Index (NSI), the ratio of the respective

percentages is used as weights on the factor score coefficients.

The Non-standardized Index (NSI) is calculated using the formula:

$$\text{NSI} = (28.39/70.04) (\text{Factor 1 score}) + (11.92/70.04) (\text{Factor 2 score}) + (8.90/70.04) (\text{Factor 3 score}) + (7.75/70.04) (\text{Factor 4 score}) + (6.87/70.04) (\text{Factor 5 score}) + (6.19/70.04) (\text{Factor 6 score})$$

This methodology, consistent with previous literature (Hightower, 1978; Antony and Rao, 2007), aids in the interpretation of results, with higher values indicating greater women empowerment. The Composite Women Empowerment Index (CWEI) is constructed using Principal Component Analysis (PCA), incorporating familial, socio-cultural, economic, and psychological empowerment dimensions. This approach addresses the challenges of measuring women empowerment comprehensively at the household level. The study contributes to the existing literature by incorporating psychological empowerment into the index, a dimension often overlooked in the context of Pakistan. The results support the model of psychological empowerment and reveal positive and significant interrelationships among familial, economic, socio-cultural, and psychological empowerment dimensions. The findings highlight that empowerment in any one of these dimensions leads to an increase in other dimensions of women empowerment.

References:

1. Acharya, Y. (2008). Women's education and intra-household autonomy: evidence from Nepal. *Journal of Development and Social Transformation*, 5(1), 5-12.
2. Allendorf, K. (2007). Do women's land rights promote empowerment and child health in Nepal?. *World development*, 35(11), 1975-1988.
3. Antony, G. M., and Rao, K. V. (2007). A composite index to explain variations in poverty, health, nutritional status and

- standard of living: Use of multivariate statistical methods. *Public Health*, 121(8), 578-587.
4. Åsling-Monemi, K., Tabassum Naved, R., and Persson, L. Å. (2008). Violence against women and the risk of under-five mortality: analysis of community-based data from rural Bangladesh. *Acta Paediatrica*, 97(2), 226-232.
 5. Batool, S. A., Ahmed, H. K., and Qureshi, S. N. (2016). Economic and psycho-social determinants of psychological empowerment in women. *Pakistan Journal of Social and Clinical Psychology*, 14(1), 21.
 6. Bhagowalia, P., Menon, P., Quisumbing, A. R., and Soundararajan, V. (2012). *What Dimensions of Women's Empowerment Matter Most for Child Nutrition? Evidence Using Nationally Representative Data from Bangladesh* (No. 1192). International Food Policy Research Institute (IFPRI).
 7. Catell, R. B. (1966). The scree test for number of factors. *Multivariate Behavioural Research*, 1, 140-161.
 8. Hightower, W. L. (1978). Development of an index of health utilizing factor analysis. *Medical care*, 245-255.
 9. Hotelling, H. (1933). Analysis of a complex of statistical variables into principal components. *Journal of educational psychology*, 24(6), 417.
 10. Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women empowerment. *Development and change*, 30(3), 435-464.
 11. Kabeer, N. (2001). Conflicts over credit: Re-evaluating the empowerment potential of loans to women in rural Bangladesh. *World development*, 29(1), 63-84.
 12. Malhotra, A., Schuler, S. R., and Boender, C. (2002, June). Measuring women empowerment as a variable in international development. In *background paper prepared for the World Bank Workshop on Poverty and Gender: New Perspectives* (Vol. 28). Washington, DC: The World Bank.
 13. Mateen, M., Chaudhary, A. R., and Pervaiz, Z. (2022). Child Education and Economic Empowerment of Women in Heterogeneous Family Structure: An empirical evidence from Pakistan. *Competitive Education Research Journal*, 3(1), 43-54.
 14. Parveen, S., and Leonhäuser, I. (2005). *Empowerment of rural women in Bangladesh: A household level analysis* (Vol. 72). Berlin: Margraf.
 15. Sen, Amartya. 1999. *Development as Freedom*. Oxford: Oxford University Press.
 16. Sen, G. (1993). Women empowerment and human rights: The challenge to policy. *population summit of the world's Scientific Academies*, 294, 1-275.
 17. Shroff, M. R., Griffiths, P. L., Suchindran, C., Nagalla, B., Vazir, S., and Bentley, M. E. (2011). Does maternal autonomy influence feeding practices and infant growth in rural India?. *Social science and medicine*, 73(3), 447-455.
 18. Tadesse, M., Teklie, H., Yazew, G., and Gebreselassie, T. (2013). Women empowerment as a determinant of contraceptive use in Ethiopia further analysis of the 2011 Ethiopia demographic and health survey. *DHS Further Analysis Reports*, 82.
 19. Thandar, M., Naing, W., and Moe, H. H. (2019). Women empowerment in Myanmar: an analysis of DHS data for married women age 15-49. *DHS Working Papers*, (143).
 20. Thomas, D. (1990). Intra-Household Resource Allocation: An Inferential Approach. *The Journal of Human Resources*, 25(4), 635-664.