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Socioeconomic Status of Women in Ahmednagar District of Maharashtra, India: A Factor Analysis Approach

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Abstract:

Women constitute about half of the world's total population, but still equality of women is not fully recognized. Their position and status have been inferior to male members of the society. The term 'status' is used here to indicate the women's position in the society that varies from region to region, religion to religion, class to class and caste to caste, especially in Indian scenario. In this paper it is endeavoured to appraise the levels of overall socio-economic status of women in Ahmednagar district of Maharashtra State and identify the most backward tahsils regarding their socio-economic status. The entire study is based on the secondary source of data. The data for the different socio-economic indicators were obtained from 2011 census of Ahmednagar, Maharashtra and India. For the present study we have been applied well known multivariate statistical techniques Principal Component Method of Factor Analysis, which is developed by H. Hotelling (1933), in order to measure the levels of socio-economic status of women at tahsil level in Ahmadnagar district. From the above discussion, it is clearly reveals that the urbanized tahsils having high, positive score on factor 1, which indicates very high level status of women's development. In contrast, less urbanised as well as un-urbanised tahsils distinctly having high negative score on factor 1 and identified with worse socio-economic status of women. In the study area, we found wide variations in the levels of socio-economic status of women and their development. Nagar tahsil was identified with very high level position of women. On the other hand, Karjat tahsil recorded with lowest level status

Key Words: *Socio-economic, Status, Gender Inequality, Equalit, Industrialization, Urbanization.*

Introduction

Gender inequality remains pervasive not only in a developing country like India but also in the developed countries of the world despite the socio-economic progress that has taken place during the last century. The status of women is unequal as compared to male and varies from caste to caste, religion to religion and region to region. The term 'Status' has been defined by United Nations as 'the extent of control that person has over his/her life, derived from the access to knowledge, social and economic resources, political power and autonomy enjoyed in the process of decision making' (UN, 1975). The term 'status' is used here to indicate women's position in the society (Ramotra, K. C. (2008). The Human Development Report (1995) presents a gloomy picture on the status of women in the world. The most striking point is that there is not a single country where women enjoy equality with men. There is no region of the developing world where women possess the same socio-economic rights as men (World Bank, 2001). India is a region of striking socio-economic and cultural diversity with wide variations. Due to the development of patriarchal society women have become a weaker section, her functions have been neglected to more procreation and attending to household chores. She has become a target of socio-economic exploitation (Bano et al., 2014). Since independence, India has made tremendous progress in the social, economic, demographic and health fields, but there exists a very wide regional disparity in the socio-economic status of women. Present factor analysis reveals the wide variations in the levels of socio-economic status of women as compared to men.

Objectives

1. To appraise the levels of overall socio-economic status of women in Ahmednagar district of Maharashtra state in 2011.
2. To identify the most backward tahsils regarding the socio-economic status of women by

applying multivariate statistical technique of factor analysis.

Study region

Ahmednagar district is situated partly in the upper Godavari basin and partly in the Bhima basin occupying a somewhat central position in the Maharashtra state (Fig. 1). It lies between 18^0 2' and 19^0 9' north latitude and 73^0 9' and 75^0 5' east longitude. It is surrounded by Nashik and Aurangabad districts to the north, Beed and Osmanabad districts to the east, Solapur and Pune districts to the south and Pune and Thane districts to the west. Topographically the district can be divided into three parts. i.e. the Sahyadri ranges, plateau region and Bhima, Godavari basins (Census, 1991). It is the largest district of Maharashtra state in terms of area. It covers an area of 17413 sq. km which is about 5.66 per cent area of the state. The total population of Ahmednagar district is 45, 43,159, out of which 51.56 per cent are male and 48.44 per cent are females in 2011.

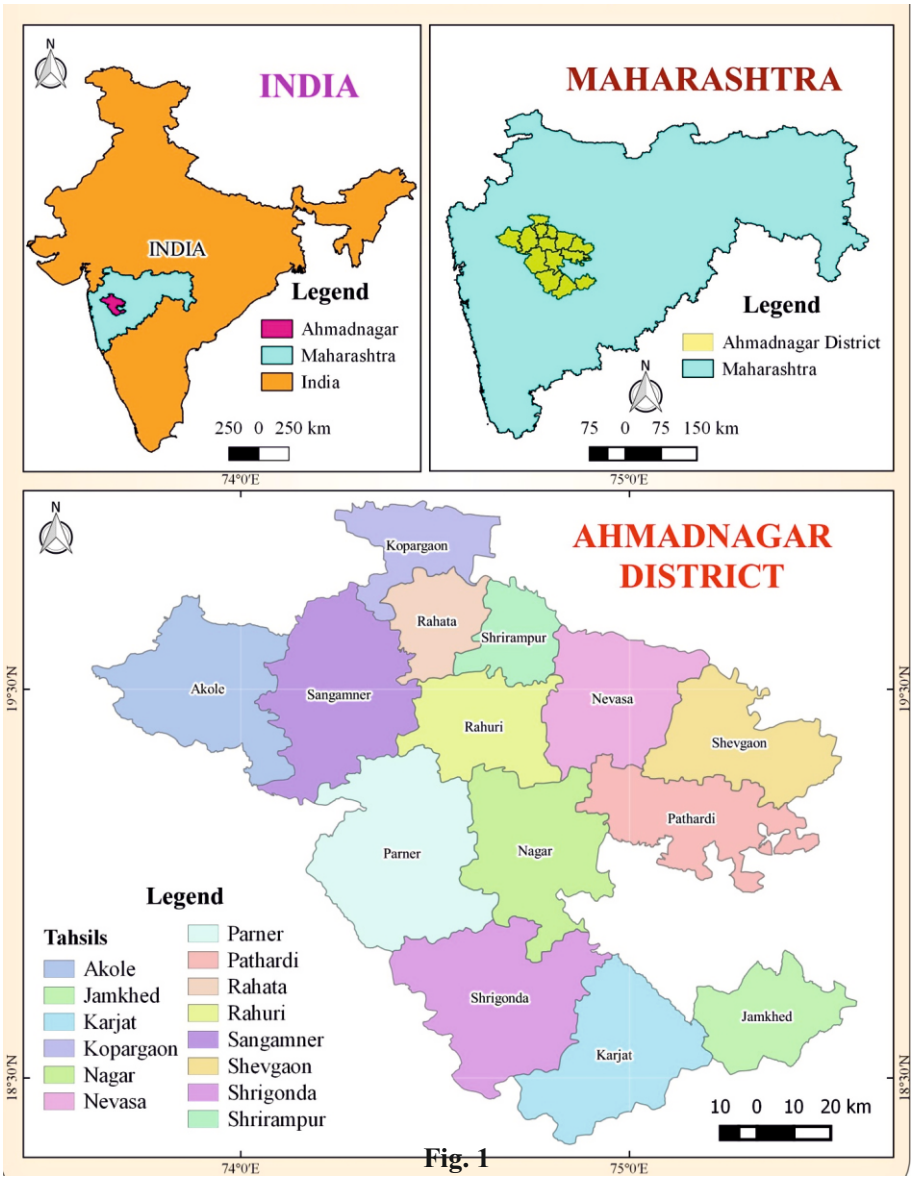

Fig. 1

Data sources and methods

Data sources

The present study is entirely based on secondary data. The data for the different socio-economic indicators were obtained from 2011 census of Ahmednagar, Maharashtra and India. Indices like, general sex ratio, child sex ratio, literacy rate, work participation rate, workers in non-agricultural sector, and proportion of urban population has been calculated by employing various formulas as per 2011 Census for measuring the status of women in comparison to men (Pawar S. N. 2024).

Methods

For the present study we have been applied well known multivariate statistical techniques Principal Component Method of Factor Analysis. There are six different demographic, socio-economic indices used in order to measure the levels of socio-economic status of women at tahsil level in Ahmadnagar district.

PCA Composite Score may be computed by using following equation.

$$FSjk = \sum_{i=1}^{m} a_{ij} z_{ij}$$

FSjk= Factor Score for k^{th}spatial unit on j^{th} factor.

i = One of the m original variables.

zij = Standardized value of i^{th} variable on j^{th} spatial unit.

aij = Factor loading of j^{th} factor and i^{th} variable.

To compute Combined Weighted Factor Score (CWFS), these individual factor scores (WFS) are simply combined by employing the following formula.

$(WFS)\, k = e_j\, (FS)_{jk}$

Where, WFS is the Weighted Factor Score for k^{th} spatial unit, e_j is the Eigen value of j^{th} factor and depicts the proportion of variation in the data set explained by j^{th} factor.

Those factors with an Eigen value (λ) greater than unity are retained (Kaiser, 1960) and also those factors accounts larger than 80 % of the total variance are used as a criteria for the purpose of the number of factors to be combined. Accordingly more than one factor is combined for more realistic result (Shaban and Bhole, 2000; Kaiser, 1960). We have been also used Scree Plot graphical method (Catell, 1966.) by considering all these criteria's, first two components are extracted, while remaining are eliminated. Further, these components are rotated by using Varimax Rotation, which is most widely used rotation in the principal component analysis for the purpose of more refined and realistic results. Thus, lastly Combined Weighted Factor Score is worked out by simply adding the Weighted Factor Scores, which is also considered as composite index of women's status. Further, for mapping and analysis purpose, these Combined Weighted Factor Scores classified into five different level categories for representing the levels of socio-economic status of women. These categories are as follows:

1. Very high level status (Above 1.5)
2. High level status (0.5 to 1.5)
3. Moderate level status (-0.5 to +0.5)
4. Low level status (-1.5 to -0.5)
5. Very low level status (Below -1.5)

Result and discussions

Correlation Analysis

Pearson's product moment correlation coefficient matrix (r) method has been used to find out the degree of correlation among the different indicators, which is used to assess the socio-economic status of women in Ahmadnagar district. The correlation matrix between the variables has been shown in Table 1.

Table 1 Correlation Matrix [Pearson ®]

Variables	GSR	CSR	FLR	FWPR	FWNAS	FUP
GSR	**1**	**0.694**	0.146	-0.136	0.149	-0.082
CSR	**0.694**	**1**	0.376	-0.345	0.307	0.205
FLR	0.146	0.376	**1**	**-0.878**	**0.91**	**0.754**
FWPR	-0.136	-0.345	**-0.878**	**1**	**-0.922**	**-0.815**
FWNAS	0.149	0.307	**0.910**	**-0.922**	**1**	**0.897**
FUP	-0.082	0.205	**0.754**	**-0.815**	**0.897**	**1**

Note: Values in bold are significant at 1% level of significance
GSR- General Sex Ratio **CSR -** Child Sex Ratio
FLR - Literacy Rate **FWPR -** Work Participation Rate
FWNAS - Workers in Non-Agricultural Sector **FUP -** Urban Population

Varimax Rotated Factor Loadings

After computing the correlation matrix, the next step is to find out few components which are hopefully accounts a larger proportion of total variance.

Table 2 Varimax Rotated Factor Loadings

Variables	D1	D2
Women		
GSR	-0.02	**0.94**
CSR	0.24	**0.89**
FLR	**0.92**	0.19
FWPR	**-0.94**	-0.16
FWNAS	**0.97**	0.14
FUP	**0.93**	-0.06

Note: Values in bold correspond for each variable to the factor for which the squared cosine is the largest.

Total Explained Variance

Table 3 Total Variance Explained By the Principal Components

Factors	F1	F2	F3	F4	F5	F6
Women						
[illegible]	3.77	1.58	0.30	0.22	0.11	0.02
Variability (%)	62.88	26.30	4.98	3.60	1.86	0.38
Cumulative (%)	62.88	89.18	94.16	97.76	99.62	100.00

Scree Plot

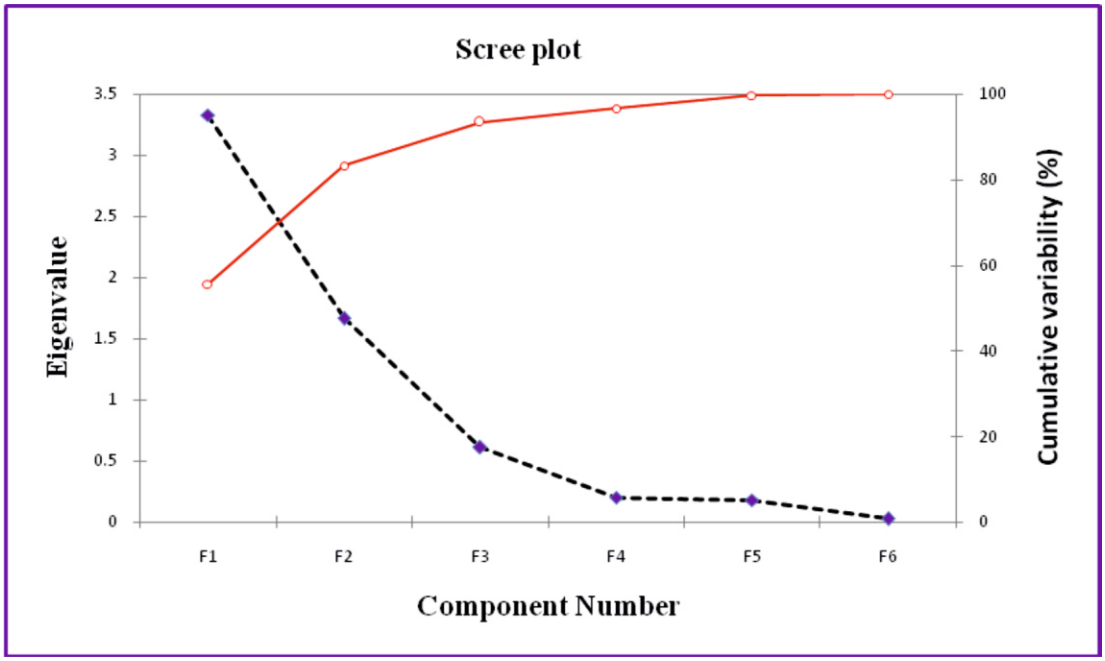

Fig. 2

Scatter Diagram of Factor Loadings after Varimax Rotation

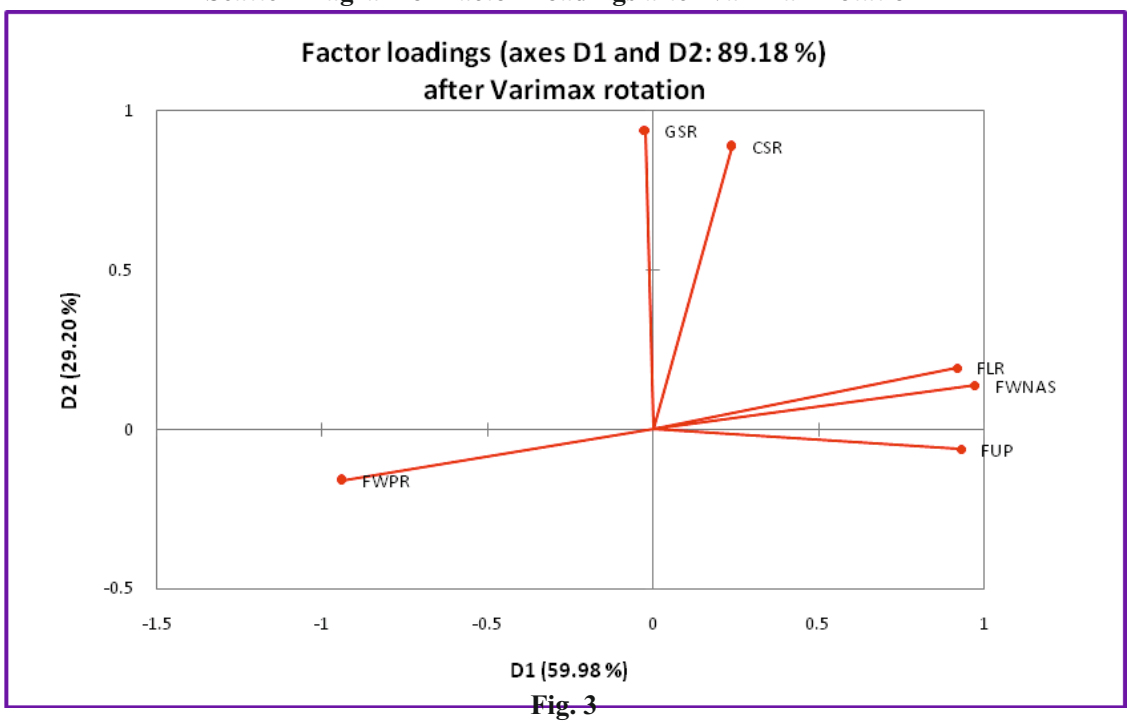

Fig. 3

Table 4 Factor Scores after Varimax rotation

Sr. No.	Tahsil	WFS				CWFS		
		Factor 1	Rank	Factor 2	Rank	Overall Status	Rank	Status
1	Akole	-1.06	14	**2.21**	1	1.16	4	H
2	Sangamner	0.14	6	**0.19**	6	0.33	6	M
3	Kopargaon	0.38	5	**1.09**	2	1.47	3	H
4	Rahata	**0.92**	3	-0.05	8	0.88	5	H
5	Shrirampur	**1.07**	2	0.98	3	2.05	2	VH
6	Nevasa	**-0.35**	8	-0.02	7	-0.37	8	M
7	Shevgaon	**-0.91**	12	0.4	5	-0.52	9	L
8	Pathardi	-0.67	11	**-0.93**	12	-1.6	13	VL
9	Nagar	**2.54**	1	-0.26	9	2.28	1	VH
10	Rahuri	0.4	4	**-0.41**	10	-0.01	7	M
11	Parner	**-0.96**	13	0.41	4	-0.55	10	L
12	Shrigonda	-0.52	9	**-0.91**	11	-1.42	11	L
13	Karjat	-0.64	10	**-1.45**	14	-2.09	14	VL
14	Jamkhed	-0.34	7	**-1.26**	13	-1.6	12	VL

Note: *Values in bold correspond for each observation to the factor for which the squared cosine is the largest.*

VH-Very High Status, **H-** High Status, **M-** Moderate Status, **L-** Low Status, **VL-** Very Low Status

Factor Analysis

Factor 1: Degree of Urbanization

First factor combined at least 4 variables of female literacy rate, female work participation rate, female workers engaged in non-agricultural sector and proportion of females in urban area.

As far as factor first is concerned, there are 3 variables indicated with significantly higher positive loading. Positive factor loading indicates that with increase in the female urban proportion, there is much increase in the female literacy rate, educational attainment and accordingly percentage of female workers in non-agricultural sector will be increased. On the other hand, female work participation rate indicates strong negative factor loading in case of first factor. That means increase in urbanization decrease in the total female work participation rate but at the same time their proportion in non-agricultural sector was increased. This factor reflects growth of urbanization and their influence on different socio-economic characteristics.

First factor shows that correlations between the variables, except the female work participation rate and sex ratio, remaining 4 variables are found to be positive. First factor accounts 62.88 per cent of the total variation for representing the women's status.

Factor 2: Demographic Dimension

For the second factor, two variables show strong positive factor loading viz. sex ratio and

child sex ratio, whereas remaining variables shows insignificant factor loading.

Strong positive factor loading reveals the universal fact that there is increase in child sex ratio of girls, there is also increase in general or overall sex ratio of female. The second factor accounts 26.30 per cent of the total variance in case of women's status.

Factor 3: Combined Weighted Factor Score

As mentioned earlier that only first two components has been used to develop Combined Weighted Factor Score (CWFS). On the basis of this score, tahsils are finally identified with very high, high, moderate, low and very low level status of women. The spatial distribution of overall socio-economic status of women is represented in Table 4 and Fig. 4.

In 2011, Nagar and Shrirampur tahsils identified with very high class status of women, followed by Kopargaon, Akole and Rahatatahsil recorded with high level status. Further, 3 tahsils fall in the category of moderate level status. Remaining as many as 3 tahsils like, Shevgaon, Parner and Shrigonda identified with lower level status of women's development. In contrast, Jamkhed, Pathardi and Karjat tahsil belongs to very low level status of women and found to be most lagging behind and highly backward tahsils than the other tahsils of the district.

From the insight view, it is worthy to note that tahsils having high weighted factor score on factor 1, depicts very high to high level status category of women's development. It is clear from the close inspection of combined weighted factor score that there is found north-south divide regarding women's status.

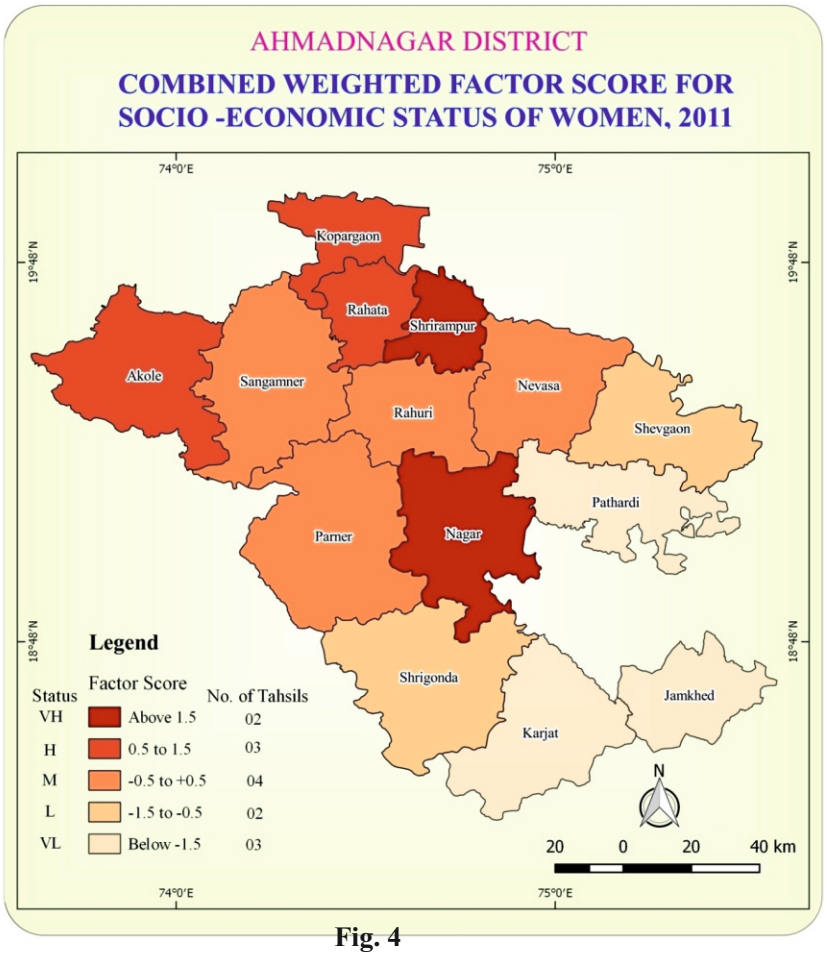

Fig. 4

Conclusions

Foregoing factor analysis shows that, first factor (D1) accounts 59.98 % variation, whereas second (D2) factor accounts 29.20 % variation. Though this analysis is carried out with limited number of variables but may be extended to greater number of variables. The first two principal components or factors are sufficient to explain more than 89 per cent of the total variability in the original data set. From the above discussion, it is clearly reveals that the urbanized tahsils having high, positive score on factor 1, which indicates very high level status of women's development. In contrast, less urbanized as well as un-urbanized tahsils distinctly having high negative score on factor 1 and identified with worse socio-economic status of women.

In the study area, we found wide variations in the levels of socio-economic status of women and their development. Nagar tahsil was identified with very high level position of women. On the other hand, Karjat tahsil recorded with lowest level status, followed by Pathardi and Jamkhed tahsil recorded with very low or inferior level status of all women. That means these 3 tahsils lagging much behind than the rest of the tahsils in the district. All these tahsils indicates slower rate of progress and lagging behind than others in terms of sex ratio, literacy rate, workers in non-agricultural sector and urban proportion with respect to women.

It is proved from the present analysis that the overall socio-economic status of women in northern part of the district is relatively better than rest of the tahsils in the southern part. It is also found that economically more developed tahsils reflects higher level status and occupy high rank, whereas economically most backward and drought affected tahsils reflects inferior level status of women and occupy much lower ranks. The government planner and policy makers should, therefore, focus their efforts particularly on the laggard tahsils like, Jamkhed, Pathardi and Karjat.

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