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Entrepreneurship Development, Micro, Small, and Medium Enterprises (MSME), and Women Empowerment*:* An Empirical Investigation

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Abstract This study examines the impact of MSMEs on women empowerment in Odisha, India. To measure women empowerment, this study exploits five parameters, namely, household empowerment, economic empowerment, social empowerment, political empowerment, and personal empowerment as their decision-making ability in various aspects of life. This study utilizes a structured questionnaire to accumulate information from women entrepreneurs. The primary data has been collected from 300 respondents (women entrepreneurs in MSMEs) from the twin cities - Cuttack and Bhubaneswar in Odisha. This study uses the methods exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to examine and analyze the latent form. The study first used EFA to examine the structure and many dimensions of women empowerment and then CFA to check the suitability and generalizability of the found factor structure. By using exploratory and confirmatory factor analysis, this study finds a valid and reliable five-dimensional concept of women empowerment in Odisha.

Keywords MSMEs, Entrepreneurship Development, Women Empowerment, Factor Analysis

I. Introduction

The Micro, Small and Medium Enterprises (MSME) sector has developed as one of the most important and active sectors of the Indian economy over the last decades. This industry is the second-largest contributor to the nation's economic

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development after agriculture. It takes a leading part in accelerating the inclusive expansion and social advancement of the nation by encouraging entrepreneurship and producing a huge number of employment opportunities at lower capital costs compared to large enterprises. Thus, they support rural employment and income, which stimulates industries in rural and underdeveloped areas. This reduces regional imbalances, gender disparities and promotes a just and fair distribution of revenue (Barik & Tripathy, 2022). According to the 73rd round of the National Sample Survey, there are 633.88 lakh MSME units in the nation, generating 11.10 crore jobs (Barik & Patil, 2024). Women entrepreneurs who launch MSME businesses gain self-assurance and expose themselves to the challenging business environment by dealing with financial, marketing, competitive, and operational issues to which they otherwise would not have been exposed. This study develops a better level of self-reliance and a perfect self-image with respect to these experiences and running her own MSME.

According to the constitution and enacted legislation, women in India are granted with the same rights as men. Though they are still dependent on males to care for the family's financial needs and devote more time to domestic duties, women do not have the identical socio-economic privileges as men (Naveen et al., 2023). The Census Report states that the sex ratio for both adults (940) and children (914) is still low. 35% of women are still illiterate, despite an increasing female literacy rate. There is a significant rate of maternal mortality. Women still have roughly 27 percentage points less possibilities than males in participating in the workforce globally. Females have a 46% employment-to-population ratio, whilst males have a 72% employment-to-population ratio. With a convenient dataset, India places 11th from the last on the basis of female workforce participation among 131 countries, according to the ILO's global employment trends 2013 report. Women have been prohibited from access to opportunities for personal growth and equal rights under the law. They have been cut off from social variables like decision-making, access to power and authority, and meeting the fundamental requirements like health and education. As a result, men outweigh women at all levels in society (Senapati &Ojha, 2019).

According to the World Development Report (2012), women are underrepresented in the workforce and have less lifelong control over resources, which leads to more economic instability and decreased economic independence. Greater disparities in market pay are related to greater variations in the amount of labour done at home by men and women. According to the International Labour Organization (ILO), women earn around 77% of what men earn globally. The amount of free time left over after taking care of domestic responsibilities determines whether or not women choose to enter the workforce. The likelihood

of involvement decreases with increasing burden, and vice versa. Women undoubtedly prefer careers that permit them more flexibility due to childcare and other household commitments. Global changes in female participation rates can be largely attributed to economic progress, more female education, and reduced fertility. According to the Directorate of Economics and Statistics study based on the NSS 68th period, females in Odisha are significantly underrepresented in the workforce (Senapati &Ojha, 2019).

Both the Sustainable Development Goal (SDG5) and the Millennium Development Goals (MDG3), established by the United Nations, include the achievement of gender parity and the emancipation of women. Since women have been encouraged to become experts on an equal basis with men and have tried to build their own initiatives, the movement of making women play major roles, has started to rise (Naveen et al., 2023). Women may empower themselves in a number of ways in today's competitive society. The government and leading intellectuals in our society have generously supported the expansion of women's roles and the demonstration of their capacity to assume leadership roles both within and outside the home. Women naturally possess managerial and creative abilities. Due to their desire to continue caring for their families, women who are searching for employment are frequently drawn to positions that allow for easy entrance and exit from the workforce. The field of entrepreneurship is open to people of all genders. Nationally and internationally, women are increasingly becoming successful business owners (Agarwal & Lenka, 2016). According to the Global Entrepreneurship Monitor (GEM) (2017), the women entrepreneurial undertaking has risen up to 10% and the gender difference has shrunk by 5%.

MSMEs are crucial to a nation and empower women by providing employment prospects. It is an important aspect in improving the economic status of women by creating jobs for both very skilled and undereducated women throughout their entire growth and recognizing their intrinsic aptitude to work in the non-agrarian sphere when work in the agriculture sphere remains stagnant. By generating jobs, increasing revenue, boosting buying power, bringing down expenses, and improving business ease, this sector adds value to the nation's economy. One strategy to include women in economic activities and reduce gender inequality is through their participation in MSMEs (Paramanandam & Packirisamy, 2015). The idea of a woman entrepreneur refers to a woman or a community of women who start, create, and operate one or more businesses. Under the Micro, Small and Medium Enterprises Development (MSMED) Act, nationalized banks, non-profit organizations, and several state small industries development companies run programmes to support potential female entrepreneurs in India. Further, MSMEs own a women's cell to address the particular issues faced by female

business owners. Due to their role in creating jobs at a cheap cost of capital, a resilient workforce, the use of regional assets and talents, and greater. MSMEs perform as a development mechanism for emerging nation's economic progress.

Owing to differences in firm size, a variety of commodities and services supplied, and the technology employed, the MSME sector in India is diversified in character. The MSME sector in India contributes roughly 40% of the nation's economic expansion, which is an important factor. More than 80% of Indian industrial businesses are included in it. The MSME sector generates around 8% of India's GDP and 40% of the country's total exports. About 95% of India's industrial units are in this sector, which employs roughly 8% of the country's human capital (Chatterjee et al., 2018).

Odisha is located in the eastern region of India. It makes up 3.47 percent of India's total population, of which 83% reside in rural regions, according to the 2011 Census. Women make up 49.46% of the state's total population. The industrial growth rate in Odisha in 2016–17 was 36.56 percent of the state's Gross State Domestic Product (GSDP). The numbers of units, investments, and jobs created in the MSME sector have all increased over time. A total of 44,288 MSME units with an investment of INR 1,966.6 crore entered into production during the 2021–2022 fiscal year, creating 1.2 lakh new jobs. A cumulative number of 5,35,913 MSMEs have been set up in Odisha as of the end of March 2022, with a total investment of INR 25,655.9 crore and the generation of 19,34,893 new jobs (Odisha Economic Survey, 2022-23). There are 86,302 MSME units, or 4.49 percent of all units are managed and controlled by women entrepreneurs, according to the 4th MSME census report. They primarily work to build tiny businesses at all levels. Women entrepreneurs are becoming more well-known as the state economy grows. Therefore, this study examines the impact of MSMEs on women empowerment in Odisha, India. By using exploratory and confirmatory factor analysis, this study finds a valid and reliable five-dimensional concept of women empowerment in Odisha, namely, household empowerment, economic empowerment, social empowerment, political empowerment, and personal empowerment.

This article is organized as follows. Following this introduction, Section 2 discusses the existing literature, Section 3 presents the data and methodology, Section 4 summarizes the empirical results. Lastly, Section 5 explains the conclusion part.

II. Review of Literature

Women entrepreneurship is seen as a powerful tool for financial progress and gender advancement (Nachimuthu and Gunatharan, 2012). Women are able to engage in and build a variety of skill-development units through entrepreneurship, which promotes self-establishment and self-reliance. Women have several options to eliminate unemployment and enhance their financial situation through entrepreneurship (Boruah & Rajkonwar, 2018). The strategy of female entrepreneurship has gained support across economies. In industrialized economies, it acts as an accelerator for the creation of new products and technologies and an economic growth engine. Women entrepreneurship offers disadvantaged nations a new perspective on economic development, poverty alleviation, job creation, and social advancement. The government and officials greatly encourage women's business achievements in order to foster wealth generation and national prosperity. Women who develop their entrepreneurial abilities are more capable of making decisions that are best for themselves, their families, and society at large. Sathiyabama (2010) indicates that the political thinkers, sociologists, and activists place a great deal of importance on the economic empowerment of women since it is increasingly considered a requirement for national growth. Now, rural women may achieve financial freedom because of Self Help Groups (SHGs), and members are involved in micro-enterprise ventures. Moreover, Paramanandan and Packirisamy (2015) investigate the effect of SHGs and micro businesses on the social and economic development of women, and point out the challenges associated with micro-entrepreneurship using both primary and secondary data. Additionally, this paper covers the effect of micro-business on the development of women as well as the needs for sustaining an enterprise. According to the survey, a majority of the participants are between the ages of 18 and 30 years and work mostly in small businesses including farming and selling fish, vegetables, and handicrafts. Saving is a key component of the SHG bank linking system, and 25% of respondents opine they can save up to Rs. 1000 each month. Another accomplishment of SHG is loan repayment on time; according to this report, 98 percent of members do so. The study includes the advantages of micro-business, such as better public awareness, self-esteem, ability to make decisions, participation in social and political activities, greater savings, economic empowerment, etc. The report recommends marketing expertise and training for the female micro-entrepreneurs.

Senapati & Ojha (2019) study the socio-economic empowerment of women through micro-entrepreneurship in Odisha. To examine the demographic features of women empowerment, this study uses OLS regression and ordered logistic regression models. Income, spending, and business decision-making are

the main economic factors that have the potential to raise the economic freedom ratings. Except for physical mobility, all social empowerment aspects like household decision making, personal decision making, self-confidence, leisure, unpaid work, business skills, and social status positively affect the level of empowerment. Income, owning a business involvement in family matters, self-reliance with regard to personal affairs, control over credit, leisure, unpaid labour, self-assurance, and social acceptance are the main facets that generate to a high overall empowerment status. Thus, MSMEs have been effective in empowering women both socially and economically. The study has extracted financing as the main obstacle for new businesses and their operating costs are followed by marketing and work-life imbalance. Naveen et al. (2023) shed light on entrepreneurship in a particular tribal community and offer some examples or situations pertaining to women empowerment. Even though there are numerous suggestions from governmental and international organizations to assist female entrepreneurs, particularly tribal women, they still experience isolation because their language and way of life are different from the rest of the society. This makes it difficult for them to grow their businesses and compete, which has a negative influence on their capability to make various life decisions. In the Mayurbhanj district of Odisha, this research explores the road to a more acceptable comprehension of improving exposure to entrepreneurship for tribal women. After establishing their livelihoods, women empowerment changes for the better; based on the study's measures, the Women Empowerment Index increased from 0.61 to 1.26. Further, it is discovered that women's household decision-making is positively and significantly impacted by entrepreneurship. In order to assist the prospects of improving women's educational attainment and their economic efficiency in establishing new firms, it is advised via research to expand government and associated organization intervention.

Akram et al. (2015) highlight the contribution of women micro-entrepreneurs to their socio-economic emancipation in Azad Kashmir using a survey approach. The age group, education level, work sector, and location of the respondents have been used to describe the demographic characteristics of women entrepreneurs. Almost all the participants in this survey are in the age group of 30-40 years and are from Mirpur in AJK (Azad Jammu & Kashmir). Most of them have degrees. The majority of them work in beauty salons. The effects of micro-business have been evaluated along three axes, including social advancement, economic status, and social status. With the use of Pearson correlation coefficients, the association between three independent variables reveals a favorable implication on the empowerment of women. The coefficient of the regression model indicates that the influence of microenterprise contributes less to social uplift and more to women's economic independence than to their freedom of movement. Barik & Tripathy (2022) emphasize the

importance of MSMEs, along with highlighting the effects of COVID-19 on MSMEs and their sustainability in order to reduce uncertainty and lessen the burden on MSMEs to resume operations. Another study explores the impacts of the COVID-19 pandemic on the socio-economic aspects of women micro businesses in Cuttack city of Odisha. Through thematic analysis, the study focuses on the challenges like monetary and psychological problems, increased domestic activities, fall in demand and sales, free mobility restrictions, health issues, and the closing down of businesses during COVID-19 (Barik & Patil, 2024). The study finds out the reverberations of the pandemic on the majority of the respondents. They also emphasize no Government support at that time and only a few could survive by adopting online business and electronic commerce adoption of MSMEs in the aftermath of the COVID-19 pandemic situation (Barik & Panda, 2023). With this backdrop, this study examines the effect of MSMEs on women empowerment in Odisha.

III. Research Methodology

The study has utilized a structured questionnaire to accumulate the information from women entrepreneurs chosen at random. To measure women empowerment, it has used some parameters like their decision-making ability in various aspect of life and has categorized them into household empowerment, economic empowerment, social empowerment, political empowerment and personal empowerment. The Likert scale, which comprises five points, has been used to get the data on a scale basis. As the study was conducted during the COVID period, it has shed light on their plight during this unprecedented financial and health crisis. It has studied the influence of MSMEs on women empowerment in terms of the effect on their status, their capacity to make choices in various aspects of life, as well as the challenges they are facing as entrepreneurs.

The primary data has been collected from 300 respondents (women entrepreneurs in MSMEs) from the twin cities - Cuttack and Bhubaneswar in Odisha, through a designed set of questions. This study uses the methods of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to examine and analyze the latent form. The study first used EFA to examine the structure and many dimensions of women empowerment and then CFA to check the suitability and generalizability of the found factor structure. It has used the

Factor analysis technique for data reduction.[1] It is a very helpful technique to simplify data complexity by reducing a high number of variables to a small number of controllable elements.

1. Measurement of Women Empowerment

Women empowerment is a key strategy for eliminating poverty. Empowered women create opportunities for the next generation and enhance the health and productivity of the entire family and community (Sujatha Gangadhar & Malyadri, 2015). "Giving power to," "creating power within," and "enabling" are the definitions of empowerment. In light of this, empowerment is a multifaceted process that should allow people or groups to completely embrace their potential and skills in all areas of life. It is a thorough process that involves self-awareness, gaining self-assurance, appreciating one's own value, organizing, taking part in decision-making, and ultimately having access to resources that are distributed equally and fairly. Thus, it envisions greater knowledge and resource access, increased independency in making decisions for oneself, enhanced ability for life planning to have more influence over the events that affect one's life, and increased capacity to break free from restrictions enforced by customs and traditions (Rani, 2014). In several studies, issues and difficulties in measuring women empowerment have been mentioned. The multifaceted nature of empowerment, the requirement for executing the idea in different circumstances and degrees of integration, the rarity of "strategic life choices" that are included in the primary rationale of empowerment, and the challenges of assessing the process are important measurement issues. The choice of empowerment indicators raises additional methodological issues, such as whether or not to measure basic or functional elements, contextual or general, interpersonal or societal, whether or not to consider psychological factors, the proper unit of analysis, causal concerns, and whether to gather quantitative or qualitative data (Sharaunga et al., 2018).

In this study, the researcher intends to measure women empowerment through decision-making ability in various aspects of life. The study has taken the following factors or domains, which are developed through review of pertinent literature and thematic analysis of data: (1) Household empowerment, (2)

[1]A multivariate statistical method known as factor analysis does not distinguish between dependent and independent variables. To extract the highlighted factors from a factor analysis, all the variables under inquiry are analyzed together. The majority of the first set of data may be explained by these variables. Concise multiple item scales for evaluating different components might be created using factor analysis. The number of statements that accurately capture the essential features of the measurement constructs can be reduced by factor analysis.

Economic empowerment, (3) Social empowerment, (4) Political empowerment, and (5) Personal empowerment. A Likert five-point scale has been prepared and used to collect data on the level of all empowerment variables among women respondents selected for the study. The responses for all the variables are coded as 1- if a respondent (women entrepreneur) alone takes the decision. 2- if the respondent and her spouse jointly make the decision. 3- if the respondent and her family members make the decision. 4- if her spouse alone makes the decision, and 5- if her family members alone make the decision. The responses for the Personal Empowerment variables are coded as: 1-very much, 2-much, 3-moderate, 4-a little and 5-not at all. These various parameters used are as follows.

1. Household Empowerment (HE): It refers to the decision-making ability of women regarding personal and family healthcare.
2. Economic Empowerment (EE): It refers to the economic independence of women. Women are given more influence over their level of living, the decisions they make about their purchases, and their way of life.
3. Social Empowerment (SE): It refers to the social and cultural factors that may have a significant impact on how women are free to make their own decisions in a society.
4. Political Empowerment: It refers to the political opportunity to influence the public or run for office.
5. Personal Empowerment: It refers to the "process of increasing personal, interpersonal, or political power, which allows people to take action to improve their life situations.

To generate a pool of items that tap into the domain of the construct, 4 to 6 items were generated for each of the five indicators of empowerment. In-depth interviews and blog data, along with items from existing scales (from the literature) were used to create the 22 items.

IV. Empirical Analysis

Factor analysis is conducted on 22 variables of women empowerment. The Kaiser-Meyer (KMO) method is used to assess the variables' suitability for exploratory factor analysis in order to produce meaningful domains. KMO test for adequate sampling where figures above 0.70 are regarded as suitable (Mganga, A E, 2021). The KMO value in this case is 0.743>0.70, and the significance level for the Bartlett's test value is 0.000, indicating that the test result appears significant at the 1% level of significance, making factor analysis acceptable. Using principal component, factor analysis has been done by taking

eigenvalues more than 1.0. Orthogonal rotation (Promax) is employed to lessen the power of multicollinearity among the items. The total variance extracted by principal component analysis explaining the factors influencing the women empowerment has revealed that there are seven factors that explain the construct more specifically with a total variance of 73.358%.

There are 28% non-redundant residuals with absolute values greater than 0.05 observed. There are cross-loadings under all the scales except the last one, which have been observed from the pattern matrix derived from EFA. The cross-loaded factors are deleted from the matrix. Now, 22 items are reduced to 15 items for further EFA. Again, the KMO value is 0.721 > 0.700 and the significance level for Bartlett's test value is 0.000. The empirical result shows that all the communalities' scores of the variables are greater than 0.5, which is the preferred value.

There are five factors that define the construct more explicitly, according to the Total Variance obtained by principal component analysis, describing the factors impacting women empowerment in Table 1. It is observed that from the extracted 15 variables; 5 factors are classified successfully with a total variance of 78%.

Table 1. Total Variance Explained (After first round data reduction)

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.319	28.795	28.795	4.319	28.795	28.795	3.050
2	2.677	17.844	46.639	2.677	17.844	46.639	3.171
3	2.129	14.196	60.835	2.129	14.196	60.835	2.930
4	1.363	9.085	69.919	1.363	9.085	69.919	2.356
5	1.213	8.083	78.003	1.213	8.083	78.003	2.456
6	.705	4.698	82.701				
7	.515	3.434	86.134				
8	.435	2.900	89.034				
9	.378	2.521	91.555				
10	.332	2.211	93.766				
11	.264	1.763	95.529				
12	.259	1.727	97.255				
13	.195	1.299	98.554				
14	.158	1.052	99.605				
15	.059	.395	100.000				

Source: Author's Calculation

Below Figure 1 shows the scree plots that display the Eigen values of the underlying factors obtained via EFA.

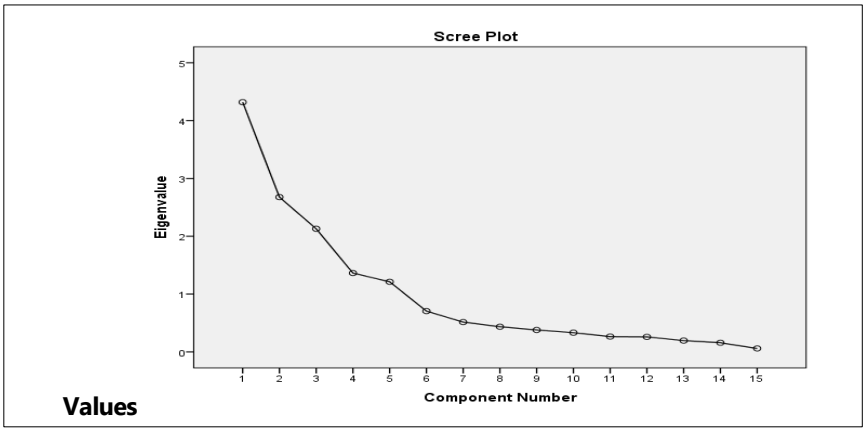

Figure 1. Scree Plots of the Eigen

The scree plot determines the number of accepted factors of women empowerment. Now, there are 23% non-repeated errors with absolute values greater than 0.05 observed.

The pattern matrix derived from the second round of analysis is shown below. The pattern matrix indicates a 5-factor model with 15 variables explaining 78% of total variance has clean (no cross) and high (greater than 0.5) loadings of variables across all factors now. All the items of factor 1 are loaded under component 3. All the items of factor 2 are loaded under component 2. All items of factor 3 are loaded under component 5. All items of factor 4 are loaded under component 4 and those of factor 5 under component 1.

Table 2. Pattern Matrix (After Second Round Factor Analysis)

	Component				
	1	2	3	4	5
Decision on maternal healthcare (HE_2)			.812		
Decision on child healthcare (HE_3)			.925		
Decision on family planning (HE_4)			.900		
Decision to take loan (EE_1)		.812			
Decision to invest (EE_2)		.889			
Decision to sell (EE_3)		.857			
Decision to keep relations with family (SE_1)					.927
Decision to keep relations with society (SE_2)					.911
Forming professional association (PE_1)				.770	
Participate in election (PE_2)				.762	
Holding the post (PE_3)				.888	
Confidence (PeE_1)	.758				
Mental satisfaction (PeE_2)	.857				
Social status (PeE_3)	.893				
Family status (PeE_4)	.884				

Source: Author's Calculation

The first factor, Household empowerment (HE), is comprised of 3 variables and explained 28% of the total variance. It has an eigenvalue of 4.319. The items HE_2, HE_3 and HE_4 are loaded under this factor. The second factor, Economic empowerment (EE), consists of 3 variables and explained 17% of the total variance. This factor has an eigenvalue of 2.677. The variables EE_1, EE_2 and EE_3 are loaded under this factor. The third factor social empowerment (SE) is comprised of 2 variables and explained 14% of the total variance. This factor has an eigenvalue of 2.129. The variables SE_1 and SE_2 are loaded under this factor. The fourth factor, Political empowerment (PE), is comprised of 3 variables and explained 9% of the total variance. This factor has an eigenvalue of 1.363. The variables PE_1, PE_2 and PE_3 are loaded under this factor. The fifth factor Personal empowerment (PeE) is comprised of 4 variables and explained 8% of the total variance. This factor has an eigenvalue of 1.213. The variables PeE_1, PeE_2, PeE_3 and PeE_4 are loaded under this factor. The extracted Component Correlation matrix is also good, as the values are greater than 0.7 if we consider the upper or lower diagonal part of the matrix, which is presented in Table 3.

Table 3. Component Correlation Matrix

Component	1	2	3	4	5
1	1.000	.128	.120	.156	.101
2	.128	1.000	.287	.265	.298
3	.120	.287	1.000	.039	.360
4	.156	.265	.039	1.000	.145
5	.101	.298	.360	.145	1.000

Source: Author's Calculation

1. Reliability

Cronbach's alpha is utilized to examine the internal dependability of all the factors, and the value for reliability should be more than 0.7. Table 4 displays Cronbach's alpha values.

Table 4. Reliability Analysis

Factors	Variables	Cronbach alpha
Household Empowerment (HE)	HE_2, HE_3, HE_4	0.871
Economic Empowerment (EE)	EE_1, EE_2, EE_3	0.877
Social Empowerment (SE)	SE_1, SE_2	0.878
Political Empowerment (PE)	PE_1, PE_2, PE_3	0.759
Personal Empowerment (PeE)	PeE_1, PeE_2, PeE_3, PeE_4	0.872

Source: Author's Calculation

From the above table, it is revealed that all the values of Cronbach's alpha of the 5 factors are greater than 0.7. Thus, from the EFA analysis, we get the following items of 5 factors, which will be examined for factor structure of the observed variables. The association between the observable variables and their latent constructs will be tested using CFA.

Further, Confirmatory factor analysis is conducted using Amos 20 based on the EFA results. The resulting Chi-square value is 153.387 and the degree of freedom is 80. The lower Chi-square value indicates a better fit and is statistically significant with a p-value of 0.000 as shown in the table below.

Table 5. Chi-square Results

Chi-square = 153.387
Degrees of freedom = 80
Probability level = .000

Source: Compiled in SPSS from collected Data

The standardized regression weights from the CFA are shown in Table 6 below, where the estimates of all the items are more than 0.5, implying that all the factor loadings are significant.

Table 6. Standardized Regression Weights

			Estimate
HE_4	<---	HE	.835
HE_3	<---	HE	.952
HE_2	<---	HE	.726
EE_3	<---	EE	.825
EE_2	<---	EE	.835
EE_1	<---	EE	.856
SE_2	<---	SE	.917
SE_1	<---	SE	.853
PE_3	<---	PE	.637
PE_2	<---	PE	.689
PE_1	<---	PE	.815
PeE_4	<---	PeE	.949
PeE_3	<---	PeE	.975
PeE_2	<---	PeE	.625
PeE_1	<---	PeE	.519

Source: Compiled in SPSS from collected Data

Composite reliability (CR) values are used to analyze the construct reliability. The CR values vary from 0.759 to 0.879, as indicated in Table 7. Scale reliability is shown by appropriate CR values of 0.60 to 0.70 (Hair et al., 2010). The recommended limit of 0.50 has been exceeded by the average variance extracted (AVE), which varies from 0.515 to 0.784 for all factors. Consequently, the convergent validity is determined for all factors (Syed & Shanmugam, 2020).

Table 7. Convergent Validity and Reliability

	CR	AVE	PE	HE	EE	SE	PeE
PE	0.759	0.515	0.718				
HE	0.879	0.710	0.051	0.843			
EE	0.877	0.704	0.419	0.346	0.839		
SE	0.879	0.784	0.167	0.428	0.426	0.886	
PeE	0.863	0.628	0.209	0.152	0.214	0.115	0.792

Source: Author's Calculation

2. Discriminant validity

If the square root of a factor's AVE is larger than its correlation with any other factor, the factor has discriminant validity (Fornell and Larcker 1981). The square root of the AVE (diagonally listed) for each item has outperformed the correlation between that factor and other factors, as shown in Table 7. As a result, discriminant validity is generated. The result of the study has confirmed five aspects of women empowerment construct with the following axes: (1) household empowerment, (2) economic empowerment, (3) social empowerment, (4) political empowerment and (5) personal empowerment. The findings of factor analysis have revealed that all five dimensions are distinctive aspects and should not be combined with each other.

3. Model Fit outline

The results of all fit indicators shown in Table 8 below are within the acceptable threshold levels, suggesting that the model fit is good. Figure 2 depicts a graphical depiction of the CFA analysis.

Table 8. Model Fit summary

Fit statistics	Names	Results	Good fit conditions
χ2	Chi-square	153.387	
Df	Degrees of freedom	80	
χ2/df	Fraction of the chi-square value to the degrees of freedom	1.917	Less than 2 (Hair et al., 2010)
p value	Significance level	0.000	>0.05 (Hair et al., 2010)
TLI	Tucker-Lewis Index	0.924	Above 0.90 (Hu and Bentler, 1999)
CFI	Comparative Fit Index	0.942	Above 0.90 (Hu and Bentler, 1999)
SRMR	Standardized Root Mean Residual	0.0566	Less than 0.08 (Hu and Bentler, 1999)
RMSEA	Root Mean Square of Error of Approximation	0.078	Less thano.08 (Hu and Bentler, 1999)

Source: Author's Calculation

The CFA results have revealed that the scales used to assess various aspects of women empowerment are valid and trustworthy. This study finds a valid and reliable five-dimensional concept of women empowerment in Odisha, namely, household empowerment, economic empowerment, social empowerment, political empowerment, and personal empowerment.

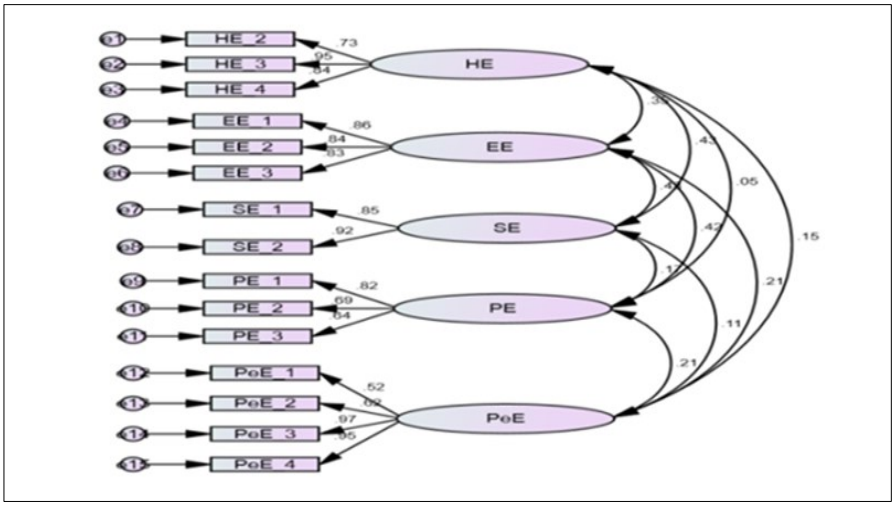

Figure 2. CFA Results

V. Conclusion

This study examines the impact of MSMEs on women empowerment in Odisha. To measure women empowerment, this study exploits five parameters, namely, household empowerment, economic empowerment, social empowerment, political empowerment, and personal empowerment as their decision-making ability in various aspects of life. The study utilizes a structured questionnaire to accumulate information from women entrepreneurs. The primary data has been collected from 300 respondents (women entrepreneurs in MSMEs) from the twin city - Cuttack and Bhubaneswar in Odisha. This study uses the methods of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to examine and analyze the latent form. The study first used EFA to examine the structure and many dimensions of women empowerment and then CFA to check the suitability and generalizability of the found factor structure. By using exploratory and confirmatory factor analysis, this study finds a valid and reliable five-dimensional concept of women empowerment in Odisha. This study suggests that the government should put special focus on MSME sector growth and provide an ample platform to do business. The government should consider developing an educational policy that would expand women's economic opportunities and raise awareness of the importance of women's self-efficacy development through its start-up eco-systems and incubation centres.

The research is limited to women entrepreneurs in MSMEs functioning in the twin city of Odisha. Further, some of the women entrepreneurs of MSMEs were reluctant to provide true data pertaining to the study. In the future, a study based on the comparison between female entrepreneurs in the MSME sector and those outside of it can shed more light on the true role that MSMEs play in empowering women.

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