



विदर्भ अर्थशास्त्र परिषदेची  
तज्ज्ञ परीक्षित संशोधन पत्रिका

# अर्थमीमांसा (ARTHAMIMANSA)

भारतीय सौर शके १९४७

(जुलै-डिसेंबर २०२५ / खंड १७, अंक २)

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◆ मुख्य संपादक ◆

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डॉ. श्रीराम कावळे

◆ संपादकीय पत्रव्यवहार ◆

धीरज सु. कदम

सहायक प्राध्यापक,

पदव्युत्तर अर्थशास्त्र विभाग (स्वायत्त)

रा.तु.म. नागपूर विद्यापीठ परिसर, अमरावती रोड, नागपूर

मो. नं. ९९२२२८१५४१

इमेल : dhiraj.kadam@gmail.com

संकेत स्थळ (Website): <https://www.arthamimansa.in/>

**विदर्भ अर्थशास्त्र परिषद कार्यकारिणी**

(२०२५-२६)

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डॉ. धीरज सु. कदम
- जिल्हानिहाय प्रतिनिधी:**  
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डॉ. मदन प्रधान (भंडारा)  
डॉ. आस्तिक मुंगमोडे (चंद्रपूर)  
डॉ. धैर्यशील खामकर (गडचिरोली)
- अक्षर जुळवणी व मुद्रक**  
आयडियल कॉम्प्युटर (महादेव कामतकर)  
नागपूर, मो. नं. ९०२१६७४८९१  
इमेल : kamatkarmahadeo@gmail.com

**परिषद आजीव सदस्यता शुल्क : रू. १५००**  
आहे, ही रक्कम माजी सचिव डॉ. विठ्ठल घिनमिने, सहयोगी प्राध्यापक, श्री साईबाबा लोकप्रबोधन कला महाविद्यालय, वडनेर, ता. हिंणघाट, जिल्हा वर्धा यांचेकडे “विदर्भ अर्थशास्त्र परिषद” या नावाने डिमांड ड्राफ्टने पाठवावी किंवा डॉ. श्रीकृष्ण बोडे यांच्याशी ९४२३४२१०५१ या नंबरवर संपर्क साधावा.

**अर्थमीमांसा संकेत स्थळ (Website)**<https://www.arthamimansa.in/>

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## संपादकीय .....

‘अर्थमीमांसा’ या संशोधन पत्रिकेचा खंड १७, अंक-२ (जुलै-डिसेंबर २०२५) वाचकांसमोर सादर करताना अत्यंत आनंद होत आहे. प्रस्तुत अंकामध्ये अर्थशास्त्र, वाणिज्य, कृषी, सार्वजनिक आरोग्य, पर्यावरण, तंत्रज्ञान, सहकार, कायदा आणि सामाजिक विकास या विविध क्षेत्रांना व्यापणारे एकूण १४ महत्त्वाचे शोधनिबंध समाविष्ट करण्यात आले आहेत. या सर्व लेखांमधून समकालीन भारतातील सामाजिक-आर्थिक परिवर्तनांचे बहुआयामी, तथ्याधारित आणि धोरणाभिमुख विश्लेषण वाचक व अभ्यासकांना अनुभवता येईल, असा विश्वास आहे.

या अंकातील चार शोधनिबंध हे महिला सक्षमीकरण आणि स्त्री-केंद्रित आर्थिक सहभाग या विषयावर प्रकाश टाकतात. अरुणकुमार के. आणि डॉ. श्रीनिवास मूर्ती यांनी दक्षिण कर्नाटकातील महिला कृषी कामगारांच्या सामाजिक-आर्थिक स्थितीचा अभ्यास करून शैक्षणिक मागासलेपणा, आरोग्य समस्या आणि सामाजिक मान्यतेच्या अभावासारख्या अडचणी अधोरेखित केल्या आहेत. दीपा धुमटकर आणि डॉ. सुभ्रमण्य भट यांनी गोव्यातील आरोग्य व मातृत्व योजनांचा महिलांच्या सामाजिक सक्षमीकरणावर झालेला परिणाम अनुभवाधारित पद्धतीने स्पष्ट केला आहे. तर स्नेहा व्यास आणि डॉ. राजेंद्र शिंदे यांनी महिलांच्या अवैतनिक कामाचा राष्ट्रीय उत्पन्न मोजणीमध्ये समावेश करण्याची गरज अधोरेखित करत, GDP संकल्पनेच्या मर्यादांवर चिकित्सक भाष्य केले आहे. डॉ. लाली शर्मा यांनी भारतातील जीवन विमा क्षेत्रातील महिलांच्या वाढत्या सहभागाचे विश्लेषण करून त्यांच्या आर्थिक सक्षमीकरणाच्या दृष्टीने महत्त्वपूर्ण निरीक्षणे मांडली आहेत.

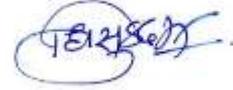
कृषी आणि ग्रामीण अर्थव्यवस्था या विषयांवरील लेख या अंकाची आणखी एक महत्त्वाची बाजू ठरतात. संदीप कौर यांनी WTO करारांचा भारतीय शेतीवर झालेला प्रतिकूल परिणाम विश्लेषित करून कृषी संकटाचे निर्देशांकात्मक मोजमाप सादर केले आहे. राधा तिवारी आणि योगेश पतिंगे यांनी वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापनाचा शाश्वत शेती उत्पादनक्षमतेवर होणारा परिणाम स्पष्ट केला आहे. तसेच, सीमा पावडे आणि राजेश चव्हाण यांनी पेसा कायद्याच्या प्रभावी अंमलबजावणीद्वारे आदिवासींच्या आर्थिक उन्नतीची क्षमता अधोरेखित केली आहे.

औद्योगिक, वित्तीय व संस्थात्मक अर्थशास्त्र या क्षेत्रातील लेखांमध्ये दिशा सिंह यांनी निफ्टी फार्मास्युटिकल कंपन्यांमधील कार्यकारी भांडवल व्यवस्थापन आणि नफाक्षमता यांतील संबंधांचे शास्त्रीय विश्लेषण केले आहे. डॉ. नरेश कुमार यांनी भारतातील परकीय भांडवल, थेट परकीय गुंतवणूक आणि परकीय कर्जाचा आर्थिक विकासातील वाटा स्पष्ट केला आहे. सर्वेशा धायमोडकर आणि डॉ. सीताराम सुकथणकर यांनी मच्छीमार सहकारी संस्थेच्या जीवनचक्रावर आधारित धोरणात्मक अभ्यास सादर केला आहे, जो सहकारी क्षेत्रासाठी दिशादर्शक ठरतो. पर्यावरण आणि शाश्वत विकास या संदर्भात शुभम आंबेकर आणि डॉ. लक्ष्मण म्हस्के यांनी महाराष्ट्रातील इको-टुरिझमच्या संधी व आव्हानांचे विश्लेषण केले आहे. ग्रामीण रोजगारनिर्मिती, पर्यावरण संवर्धन आणि धोरणात्मक समन्वय यांतील परस्परसंबंध या लेखात प्रभावीपणे मांडले आहेत.

वर्तमान काळातील महत्त्वाचा विषय असलेल्या कृत्रिम बुद्धिमत्ता (AI) संदर्भात दोन लेख या अंकात समाविष्ट आहेत. विजयता उईके आणि स्वप्नील फुलझले यांनी असंघटित क्षेत्रावर AI च्या परिणामांचा अभ्यास करून रोजगार विस्थापन, उत्पन्न विषमता आणि सामाजिक असुरक्षिततेचे धोके अधोरेखित केले आहेत. तर आदित्य कनोजिया आणि डॉ. महेश शितोळे यांनी व्यवसायिक न्यायप्रक्रियेमधील AI च्या वापराचे आर्थिक, नैतिक आणि कायदेशीर परिणाम स्पष्ट केले आहेत. याशिवाय, क्रांती बोरावके यांनी महाराष्ट्रातील सार्वजनिक आरोग्य खर्चाचा मागील दशकातील आढावा घेतला असून सार्वजनिक आरोग्य धोरणांच्या आर्थिक परिणामांवर सखोल चर्चा केली आहे.

हा अंक सिद्ध करण्यासाठी सर्व लेखकांनी दिलेल्या मोलाच्या योगदानाबद्दल मी त्यांचे मनःपूर्वक आभार व्यक्त करतो. तसेच, विदर्भ अर्थशास्त्र परिषदेचे माजी व वर्तमान पदाधिकारी, कार्यकारिणी सदस्य, संपादकीय मंडळ आणि मुद्रण सहकारी यांच्या सहकार्यामुळे हा अंक वाचकांपर्यंत पोहोचू शकला आहे. अर्थमीमांसाच्या संपादकीय मंडळाने दिलेल्या मार्गदर्शनाबद्दल मी ऋणी आहे.

हा अंक वाचक, संशोधक, अभ्यासक आणि धोरणकर्त्यांसाठी निश्चितच उपयुक्त ठरेल आणि समतामूलक, शाश्वत व सर्वसमावेशक विकासावरील चर्चेला नवी दिशा देईल, अशी मला आशा आहे. हा अंक आपल्या चिकित्सक प्रतिक्रियेसाठी सादर करित आहे.



(डॉ. धीरज सु. कदम)

प्रमुख संपादक – 'अर्थमीमांसा'

दिनांक : ३१ डिसेंबर २०२५

स्थळ : नागपूर

## Women in Agriculture: Socio-Economic Perspectives from South Karnataka

**Arunkumar K**  
Research Scholar,  
DOSR in Commerce,  
Tumkur University, Tumakuru,  
E-mail: arunkumar.k290@gmail.com  
ORCID iD: 0009-0009-3429-459X

**Srinivasa Murthy M D**  
Associate Professor,  
DOSR in Commerce  
Tumkur University, Tumakuru,  
E-mail: smd.tmk@gmail.com

### Abstracts

*The study focuses on the challenges faced by women in agriculture, including educational backwardness, poverty, deprivation, ill-health, and lack of opportunities for economic, political, and social development. The study highlights the potential of women in agriculture and the need for their recognition as progressive farmers. The research methodology includes a survey of 150 female agriculturalists in South Karnataka, and the results show a significant relationship between the selected districts and the level of social recognition received by female agriculturalists. The study concludes that the socio-economic development of women agriculturalists has not reached a certain level, and there is a need for policies and programs to address the challenges faced by women in agriculture. Overall, this study provides valuable insights into the role of women in agriculture and the importance of their recognition and support for rural development.*

**Keywords:** Socio-economic status, Female Agriculturalists, South Karnataka, Rural Women

**JEL Classification Code:** I3, J16, R1, O13

### 1. Introduction

Agriculture is a crucial sector in Karnataka's economy, and women play a pivotal role in various aspects of farming and rural life (Sunitha et al., 2018). Women in rural Karnataka have been actively involved in agriculture, contributing significantly to food production. While their roles were often relegated to subsidiary tasks like weeding and harvesting, over time, their engagement has expanded to encompass broader responsibilities, including land ownership, decision-making, and agribusiness ventures. The involvement

of female agriculturalists has a positive impact on Karnataka's agricultural sector (Kumar Rathod et al., 2011). Improved agricultural productivity due to their knowledge of traditional farming practices. Diversification of crops and agribusiness, leading to increased income and rural development (Chandra Deogharia, 2018). Preservation of agricultural biodiversity through seed-saving practices. Enhanced food security and nutrition through their contribution to both cultivation and household management (Sunderland et al., n.d.).

## 2. Review of literature

This is a case study on the socio-economic status of farm women in Faizabad District of Uttar-Pradesh, India. Rural women constitute 80% of the total women population in India and are capable of playing a pivotal role in the rural economy. However, they face challenges such as educational backwardness, poverty, deprivation, ill-health, and lack of opportunities for economic, political, and social development. The study highlights the potential of women in agriculture and the need for their recognition as progressive farmers. The study also indicates that family conditions affect girls' education and dropout rates (Tewari and Dwivedi, 2011)

Article deals with socio-economic characteristics of women farmers and their impact on family nutrition in Kakiyeye Village, Kaduna State, Nigeria. The study found that home gardening and farm ownership should be encouraged among women farmers to enhance proper nutrition of the family. The study also revealed that women empowerment (financially) for sustainable development towards economic security is necessary to equip them with the capacity to live meaningfully (Okwori et al. 2012)

The article, written by Dr. MunMunGhosh and Dr. ArindamGhosh (2014), highlights the growth trend of female participation in agriculture across various Indian states. Despite being a significant part of the workforce, many women remain invisible in the industry. The research sheds light on potential reasons for this invisibility and the need for further investigation into the issue.

The study explores the ecological and socio-economic aspects of women's

contribution to the agricultural sector in the region. The study highlights the challenges faced by women farmers and the technological gap between rural women and developmental programs (Bordoloi, 2021).

A case study of Karimnagar district in Andhra Pradesh, India, that examines the socio-economic conditions of women working in agriculture. It includes a review of select and recent studies on women's employment and labor utilization, covering aspects such as women's participation, technology, cropping patterns, irrigation facilities, economic contribution, migration, education, and discrimination. The study concludes with an analysis of the economic contribution of agricultural working women to household income and the pattern of expenditure and savings of agricultural women labor in the study area (Abidin and Prasetyani, 2021).

A study conducted on the socio-economic status of farm women and the constraints they face in agriculture and allied systems in Jammu District. It highlights the challenges faced by women in the agricultural sector, such as lack of financial resources, suitable equipment, and market malpractices. The article emphasizes the need for targeted interventions to improve the situation of women in agriculture and promote gender equality in rural areas. Overall, it provides valuable insights into the socio-economic factors affecting the participation of women in agriculture and the policy measures that can be taken to address these challenges (Sneha et al. 2022).

## 3. Research gap

A research gap in the study of the socio-economic status of female

agriculturalists in South Karnataka is the limited empirical investigation into the specific barriers and opportunities that affect their access to agricultural resources, economic decision-making power, and overall well-being within the context of local socio-cultural and economic dynamics.

#### 4. Objectives and Hypotheses of the Study

##### 4.1. Objectives of the Study

- To study the demographic characteristics of female Agriculturalists in South Karnataka.
- To examine the social status of female agriculturalists in South Karnataka.
- To figure out the level of economic empowerment of female agriculturalists in the South Karnataka.

##### 4.2. Hypotheses of the Study

H<sub>01</sub>: There is no significance difference between place of resident and range of monthly income among female agriculturalists in South Karnataka.

H<sub>02</sub>: There is no significance difference between place of resident and level of social recognition among female agriculturalists in South Karnataka.

#### 5. Research methodology

##### 5.1. Materials and Methods

The study focuses on the Socio-economic status of female agriculturalists and issues related to female agriculturalists in South Karnataka. The present study is empirical in nature and data collected from selected districts in South Karnataka. The population of the study is unknown so equal numbers of female agriculturalists were selected from

selected districts in South Karnataka. South Karnataka includes 15 districts out of 15 districts 6 are selected based on highest female agriculturalists. The convenience sampling technique has been used for the purpose of obtaining the sample units for the study.

**Table 1: Sample Respondents from the selected districts of South Karnataka state**

Sl. No.	Name of district	Frequency	Percent
1	Bengaluru Rural	25	16.67
2	Tumakuru	25	16.67
3	Mandy	25	16.67
4	Kolar	25	16.67
5	Hassan	25	16.67
6	Mysuru	25	16.67
Total		150	100

Source: Author's Own Compilation

For the purpose of the study 25 numbers of respondents were selected from the selected districts of the south Karnataka. Data is collected through questionnaire using interview schedule method. The primary data of the study is presented with the help of tables, graphs and charts, and analyzed and interpreted with descriptive statistics. Further, the correlation has been observed between demographic variables with socio-economic factors to analyze the result lucidly.

##### 5.2. Locale of the Study

The present study is conducted on the selected districts of South Karnataka. The 6 districts were selected i.e. Bengaluru rural, Tumakuru, Mandya, Kolar, Hassan and Mysuru. From each districts 25 female agriculturalist were selected for data collection.

### 6. Data Analysis

In order to fulfill the objectives laid in this paper, the results of the field survey are depicted in the subsequent tables

The table 2 represents the sample female agriculturalists mostly are in age group of 25 years to 45 years of age. It means the female agriculturalists of Karnataka are mostly young.

**Table 2: Demographic Profile of Female Agriculturalists**

Sl.No.	Particulars	Groups	Frequency	Percent
1	Age Group	18 - 25 Years	22	14.67
		25 - 35 Years	51	34.00
		35 - 45 Years	55	36.67
		45 - 55 Years	13	8.67
		55 Years and above	9	6.00
Total			150	100.00
2	Educational Qualification	Illiterate	85	56.67
		Primary	27	18
		Matriculation	19	12.67
		Intermediate/PU	11	7.33
		Graduate	6	4
		Post Graduate	2	1.3
Total			150	100
3	Marital Status	Unmarried	2	1.33
		Married	148	98.67
Total			150	100
4	Social Category	Unreserved	38	25.33
		OBC	69	46.00
		SC	32	21.33
		ST	11	7.33
Total			150	100
5	Religious Belief	Hindu	143	95.33
		Muslim	5	3.33
		Christian	1	0.67
		Buddist	0	0.00
		Other	1	0.67
Total			150	100

Source: Primary Data

The table also shows 56.67% of the respondents were illiterate, 18% got primary education and remaining 25.33% were studied matriculation and above. The study shows that 98.67 % of

female agriculturalists of Karnataka are married and rest 1.33% are unmarried.

The table also shows in the total 150 respondents 25.33% of respondents related to unreserved social category,

46% related to OBC, 21.33% are belongs to SC and remaining 7.33% respondents belongs to ST community. It also shows religious belief of the respondent's

majority of the female agriculturalists are Hindu i.e.95.33% and remaining 4.67% belongs to other religion like Muslim, Christian and other.

**Table 3: Female agriculturalists Family and agriculture profile**

Sl.No.	Particulars	Groups	Frequency	Percent
1	Family Type	Nuclear	146	97.33
		Joint	4	2.67
Total			150	100
2	No. of Family Members	Up to Two	28	18.67
		Two to Five	73	48.67
		Five to Eight	36	24.00
		Eight and Above	13	8.67
Total			150	100
3	Family Support	Yes	108	72.00
		No	42	28.00
Total			150	100
4	Resident Location	Urban	12	8
		Rural	138	92
Total			150	100
5	Years of Existence	Less than 5 years	26	17.33
		5 years to 10 years	55	36.67
		10 years to 20 years	61	40.67
		above 20 years	8	5.33
Total			150	100

Source: Primary Data

The table 3 projects that 2.67% of the female agriculturalists are from joint family member and remaining 97.33% of the respondents from the nuclear family. Around 18.67% female agriculturalists cited that they have up to two members in their family. Whereas 48.67% of female agriculturalists state that they have up to five members in the respective family. 24% of the respondents have up to eight members in the respective family and 8.67% of the respondents have the above eight members in their family. In addition, table 3 depicts that 72% of the female

agriculturalists get support from their family members and 28% of respondents do not get family support for agricultural activities and also its state that majority of the respondents are located at rural area. it is also analyzed that 17.33% of female agriculturalists have less than 5 years of experience in agricultural activities; followed by 36.67% respondents have five to ten-year experience, 40.67% respondents have ten to twenty years of experience and only 5.33% of respondents have above 20 years of experience.

**Table 4: Monthly income of Female Agriculturalists**

Sl.No.	Income (in Rs.)	Frequency	Percent
1	up to 5000	28	18.66
2	5000-10000	32	21.33
3	10000-15000	42	28
4	15000-20000	25	16.67
5	20000-25000	16	10.67
6	above 25000	7	4.66
Total		150	100

Source: Primary Data

The study found (Table 4) that 18.66% of the female agriculturalists of selected districts in Karnataka earn up to Rs.5000 p.m., followed by 21.33% earns Rs.5000 to Rs.10000 p.m., 28% respondents

earns Rs.10000 to Rs.15000 p.m., 6.67% respondents earns Rs.15000 to Rs.20000 p.m., 10.67% respondents earn Rs.20000 to Rs.25000 p.m., and only 4.66% of the respondents earns above Rs.25000 p.m. from the agricultural activities.

**Table 5: Social Recognition for the female agriculturalists**

Sl. No.	Recognition Level	Frequency	Percent
1	Low	102	68
2	Medium	40	26.67
3	High	8	5.33
Total		150	100

Source: Primary Data

The table 5 shows that 68% of the respondents have low level of social recognition, around 26.67% of the respondents have medium level of social recognition and only 5.33% of the female agriculturalists have the high level social recognition.

**Table 6: Socio-economic factors to measure status of female agriculturalists**

Sl.No.	Factors	Responses	Frequency	Percent
1	Better education for children	Yes	61	40.67
		No	89	59.33
Total			150	100
2	Access to Good healthcare facilities	Yes	55	36.67
		No	95	63.33
Total			150	100
3	Better clothing for family	Yes	112	74.67
		No	38	25.33
Total			150	100
4	Community Participation	Better	30	20
		Same as earlier	120	80
Total			150	100
5	Income of household	Improved	72	48
		Same as earlier	78	52
Total			150	100
6	Savings from income	Yes	15	10
		No	135	90
Total			150	100

7	Insurance policy purchased for own life and dependent family members	Yes	28	18.67
		No	122	81.33
Total			150	100
8	Assets creation	Yes	9	6
		No	141	94
Total			150	100
9	Housing situation	Improved	35	23.33
		Same as earlier	115	76.67
Total			150	100.00

Source: Primary Data

Table 6 indicates the various factors to measure the socio-economic status of female agriculturalists of south Karnataka. The study projects that 40.67% of sample female agriculturalists responded for better education for their children. Similarly, around 36.67% of respondents responded that they can be avail better healthcare facilities. Also, around 74.67% of female agriculturalists responded that they can afford better clothing for their families regularly. With respect to the community participation, around 20% respondents responded that their community participation has improved.

In case of household income, 48% of female agriculturalists state that it has been improved due to their involvement

in agricultural activities. However, only 10% respondents cited that they were able to save money from their agriculture income. Similarly, only 18.67% female agriculturalists purchased insurance policy and rest are not at all insured. Only 6% respondents stated that they purchase the asset others are not. However, 23.33% of the female agriculturalists have responded that their involvement in agricultural activities has improved their housing situation in the locality.

**7. Results and Discussion**

To test both the hypothesis of the present study chi square test has been applied to test the null hypothesis. Subsequently few inferences have also been drawn with the help of cross tabulation.

**Table 7: Crosstab between selected district and Monthly income**

Sl.No	District Name	Range of Monthly income						Total
		Up to Rs.5000	5000 - 10000	10000- 15000	15000 - 20000	20000 - 25000	above 25000	
1	Bengaluru Rural	3(12)	4(16)	9(36)	6(24)	2(8)	1(4)	25(100)
2	Tumakuru	4(16)	4(16)	7(28)	5(20)	3(12)	2(8)	25(100)
3	Mandya	6(24)	4(16)	6(24)	4(16)	3(12)	2(8)	25(100)
4	Kolar	3(12)	5(20)	8(32)	4(16)	4(16)	1(4)	25(100)
5	Hassan	7(28)	7(28)	6(24)	3(12)	2(8)	0(0)	25(100)
6	Mysuru	5(20)	8(32)	6(24)	3(12)	2(8)	1(4)	25(100)
Total		28 (18.7)	32 (21.3)	42 (3)	25 (16.7)	16 (10.7)	7 (4.7)	150 (100)

Source: Primary Data; (\* Value in parentheses is in percentage )

The Table 7 reflects that 36 percent of female agriculturalists of Bengaluru rural district earn monthly income up to Rs.15000 and only 4 percent of them earn more than Rs. 25000. In Tumakuru district 28percent of the respondents are earn up to Rs.20000 but only 8 percent respondents earn above Rs.25000. Overall stable shows majority female agriculturalists earn up to Rs.15000 in other districts and less percentage respondents earn above Rs.25000.

The Chi-square result on table 8 state  $p > 0.05$  (25, N-150). Hence we accept the Null Hypothesis.

Thus, there is no significant relation exists between the selected districts and the level of monthly income earned by the female agriculturalists in South Karnataka.

**Table 8: Result of Chi-Square Tests on Selected Districts and Monthly Income**

	Value	Df
Chi-square	12.1935	25
P Value	0.9849	25
N of Valid cases	150	

Source: Authors own Compliance

The table-9 shows the relation between selected district and Social recognition.

**Table 9: Crosstab between Selected District and Social Recognition**

Sl.No.	District	Level of social recognition			Total
		Low	Medium	High	
1	Bengaluru Rural	19(76)	5(20)	1(4)	25(16.67)
2	Tumakuru	20(80)	3(12)	2(8)	25(16.67)
3	Mandya	15(60)	8(32)	2(8)	25(16.67)
4	Kolar	12(48)	12(48)	1(4)	25(16.67)
5	Hassan	17(68)	6(24)	2(8)	25(16.67)
6	Mysuru	19(76)	6(24)	0(0)	25(16.67)
Total		102(68)	40(26.67)	8(5.33)	150(100)

Source: Primary Data; (\* Value in parentheses is in percentage)

All the district female agriculturalists level of social recognition is low very few female agriculturalist level of social recognition is high.

**Table 10: Result of Crosstab between Selected districts and Social Recognition**

	Value	Df
Chi-square	11.15	10
P Value	0.3458	10
N of Valid cases	150	

Source: Authors own Compliance

The Chi-square result on table 10 states  $p < 0.05$  (10, N=150). Hence we reject the null hypothesis.

Thus, there is significant relation exists between the selected districts and the level of social recognition received by the female agriculturalists in South Karnataka

## 8. Conclusion

Woman role in agricultural activities is unaccountable in India but their contribution play a significant role in

development of agriculture. One of the key finding of this study is socio and economic development of the women agriculturalist is not reach up to the certain level. Government needs to take initiatives and lunch separate schemes for women agriculturalists to promote their socio-economic status.

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## Bridging Health Interventions and Empowerment: An Analysis of Women Beneficiaries of Health and Maternity Schemes in Goa

**Deepa V. Dhumatkar**

Research Scholar, Research Centre, S.S.A  
Government College of Arts and  
Commerce, Pernem, Goa University, Goa,  
**Email:** deepadhumatkar2020@gmail.com

**Subrahmanya Bhat**

Professor, VVM's Shree Damodar College  
of Commerce & Economics, Margao,  
Goa University, Goa 403601  
**Email:** skmbhat@yahoo.co.in

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### Abstract

*Empowerment of women is considered important for building a knowledge-driven society, as it significantly contributes to the well-being of individual families and has a positive impact on society and the nation at large. The study explores the effect of health and maternity schemes on the social empowerment of women beneficiaries in the State of Goa. It assesses how the government initiatives bring about positive changes in the decision-making, personal independence, social status and security of women beneficiaries. An empirical approach was adopted and a sample size of 300 women beneficiaries was considered using the stratified and snowball sampling methods. Partial Least Squares-Structural Equation Modelling (PLS-SEM) using Smart PLS 4 were adopted for data analysis to identify the relationship between health schemes and social empowerment leading to overall women empowerment. The findings highlight that women beneficiaries have improved health outcomes along with greater confidence, autonomy and recognition in society, especially the marginalised. The need for continued strategy support and targeted outreach to maximise the empowering potential of health schemes among women, to bring about inclusive development, growth and gender parity in regional contexts is emphasised in the study.*

**Keywords:** Decision-Making, Health and Maternity Schemes, Social Empowerment, Social Status and Security, Women Empowerment.

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### 1. Introduction

Government health schemes serve as critical mechanisms for advancing women's social empowerment through multidimensional interventions that integrate healthcare provision with strategies targeting economic security and social well-being. Sharaunga et al., (2019) conceptualised empowerment as the interplay of agency and resource access and it underpins global initiatives to enhance women's autonomy over health and life decisions, while bolstering their capacity for informed

decision-making and quality-of-life improvements (Sen et al., 2021; Reich, 2024). National development depends on women's active participation, yet for marginalised groups constrained by illiteracy, poverty and patriarchal norms, this remains a gradual process requiring sustained societal and institutional support to secure rights and equity (Nazneen et al., 2019; Kabeer, 2005).

In Goa, health and maternity schemes; namely the Mamta Scheme (MS), Pradhan Mantri Matru Vandana Yojana (PMMVY) and Janani Suraksha

Yojana (JSY) act as pivotal catalysts by delivering essential services such as nutritional support, institutional deliveries, antenatal care, postnatal care and financial incentives, thereby reducing maternal and infant mortality while fostering awareness, confidence and participation in family and community affairs (Azuh et al., 2017; Kumar & Singh, 2016; Gupta & Joe, 2021). These programs alleviate economic vulnerability, elevate social status within patriarchal structures and enhance decision-making prowess among beneficiaries (Rao et al., 2013).

## 2. Literature Review and Hypotheses Formulation

### 2.1 Literature Review

Social empowerment entails the process by which individuals, particularly women in developing economies like India, gain agency in decision-making, secure access to and control over resources and participate meaningfully in social, economic and political spheres. This concept is intrinsically linked to health and maternity services, where health serves not merely as the absence of disease but as a foundational enabler of productive, autonomous lives (Kabeer, 1999). Government schemes such as JSY provide financial incentives and institutional support to pregnant and lactating women, alleviating childbirth-related economic burdens while enhancing healthcare access (Ngamasana & Moxie, 2024). Empirical evidence underscores their role in advancing women's empowerment through collaborative governance, alongside education, health and employment as critical determinants that elevate socio-economic status and economic contributions (Powell et al., 2009; Sarkar & Sensarma, 2024;

Palaniappan & Aniyam, 2010; Gonzalo et al., 2017).

Health-oriented interventions further catalyse social empowerment by facilitating women's engagement in education, skill development and local governance, though their effectiveness varies by regional implementation, beneficiary awareness and socio-cultural barriers (Chattopadhyay & Mishra, 2017; Kavitha & Menon, 2025). While these schemes lay a robust foundation for transformation, their impact intensifies when paired with awareness campaigns and community mobilisation. Literature affirms the dual role of health schemes in improving physical well-being and driving broader social change; however, this study addresses a notable research gap that persists in empirical analyses of government health and maternity schemes' implementation and outcomes in Goa.

Identifying this research gap, the main research questions (RQs) arrived at were:

**RQ1:** Do the health and maternity schemes implemented in the State of Goa help the women beneficiaries to become socially empowered?

**RQ2:** Does social empowerment lead to women empowerment in Goa?

To address the research questions, the objectives of the study were framed as follows:

1. To assess the impact of health and maternity schemes on the social empowerment of women beneficiaries in Goa.
2. To assess the impact of social empowerment on women empowerment.

## 2.2 Hypotheses Formulation

Based on this background, the hypotheses have been formulated as under:

### 2.2.1 Health and Maternity Schemes -> Social Empowerment

Health and maternity schemes play a pivotal role in fostering social empowerment among women by addressing vital health needs, bringing down maternal mortality and also increasing access to quality health care. The schemes also promote their participation in household and community decision-making by reducing health-related vulnerabilities. Access to institutional deliveries, antenatal and postnatal care and financial incentives through schemes like the JSY and PMMVY empowers women socially by building their confidence and autonomy (Kumar & Prakash, 2021).

The hypothesis proposed is as under:

- **H<sub>1</sub>**: There exists an impact of health and maternity schemes on the social empowerment of women beneficiaries.

### 2.2.2 Social Empowerment->Women Empowerment:

Social empowerment boosts women's agency, voice and decision-making through access to education, healthcare, networks and participatory platforms. It transforms identities, fosters self-efficacy and autonomy, challenges gender hierarchies and enables participation in economic, political and familial spheres (Kabeer, 1999).

Thus, the proposed hypothesis is as under:

- **H<sub>2</sub>**: There exists an impact of social empowerment on women empowerment.

## 3. Dimensions of Social Empowerment

Social empowerment is the second-order construct in the model of the study and it is measured with the help of three constructs, namely: decision making, personal independence, social status and security.

### 3.1 Decision Making

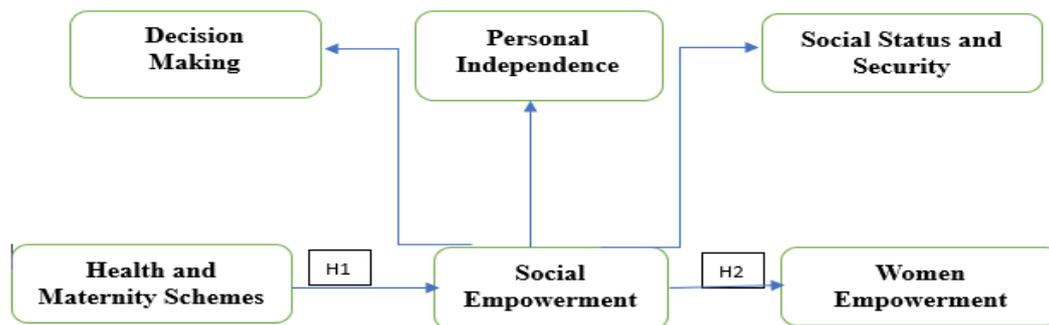
Women's participation in household decisions on healthcare, major expenditures and mobility indicates autonomy and influence (Jejeebhoy, 2000). Maternal health interventions strengthen agency in family planning, child education and nutrition (Chattopadhyay & Mishra, 2017), while schemes like PMMVY advance financial inclusion via direct transfers, increasing control over resources (Gupta & Joe, 2021).

### 3.2 Personal Independence

Health and maternity schemes boost women's mobility and public participation. Engaging with health centres reduces isolation, builds confidence and extends involvement to community programs and governance, promoting social inclusion and independence (Kumar & Singh, 2016).

### 3.3 Social Status and Security

Social empowerment elevates women's status and security via participation in societal structures, rights access and community recognition. It challenges discriminatory norms, fosters self-efficacy and ensures equitable roles in family and public spheres through education, healthcare and support systems. This reduces vulnerability, boosts dignity, curbs gender violence and enhances social safety nets (Desai & Thakkar, 2007).



**Figure 1: Conceptual Model**

Source: Author's Compilation

**4. Research Methodology**

**4.1 Sample Design**

This study adopts an empirical survey design for data collection. The sample consists of 300 women beneficiaries from three targeted schemes PMMVY, JSY and MS selected through purposive sampling supplemented by snowball techniques to ensure adequate representation of eligible participants.

**4.2 Questionnaire Design**

A structured questionnaire was personally administered to 320 beneficiaries. Out of 320, 300 yielded usable responses with a response rate of 93.75 percent. Comprising 22 items across four constructs; Decision Making, Personal Independence and Social Status and Security and Women Empowerment, the instrument

measured social empowerment (dependent variable) and its impact on women empowerment. Adapted from validated scales, it employed a 5-point Likert scale (1=strongly disagree; 5=strongly agree).

**5. Analysis and Results**

Table 1 provides detailed information about the demographic characteristics of the respondents. It was observed that 40 percent of the beneficiaries were from North Goa and 60 percent of them were from the South District. Majority of the women beneficiaries belonged to the age group of 25-40 years (44 percent) and 55 percent of them lived areas under the jurisdiction of Municipality. 45 percent of the beneficiaries had an annual income of less than Rs. 3,00,000.

**Table 1: Demographic Characteristics of Women Beneficiaries (n=300)**

Variable	Classification	Frequency	Percentage
District	North	120	40.00
	South	180	60.00
Age Group	Below 25 years	110	36.67
	25-40 years	132	44.00
	40 years and above	58	19.33
Residential Area	Municipality	165	55.00
	Panchayat	135	45.00
Annual Income	Less than 3,00,000	135	45.00
	3,00,000-5,00,000	87	29.00
	5,00,000 and above	78	26.00

Source: Primary Data

**5.1 Measurement Model**

PLS-SEM using Smart PLS4 was adopted for analysis of the data. PLS-SEM is largely employed in management research due to its capability of generating reliable results. The outer model was first confirmed for its

discriminant and convergent validity, followed by evaluation of the hypotheses using the inner model. Table 2 shows the construct reliability and validity of the measurement model, assessed with CA, CR and AVE, which were found to be acceptable.

**Table 2: Construct Validity and Reliability**

Constructs	Variable Code	Factor Loading	Variation Inflation Factor (VIF)	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Social Empowerment	SE			0.921	0.930	0.404
	DM1	0.842	2.832			
Decision Making (DM)	DM2	0.833	2.878			
	DM3	0.859	3.217	0.927	0.943	0.733
	DM4	0.863	3.698			
	DM5	0.879	3.700			
	DM6	0.859	3.319			
Personal Independence (PI)	PI1	0.776	2.090			
	PI2	0.869	3.319			
	PI3	0.884	3.440	0.907	0.931	0.731
	PI4	0.880	3.646			
	PI5	0.861	2.838			
Social Status and Security (SSS)	SSS1	0.781	2.105			
	SSS2	0.779	2.191			
	SSS3	0.815	2.457			
	SSS4	0.814	2.451	0.905	0.925	0.638
	SSS5	0.846	2.716			
	SSS6	0.774	2.303			
	SSS7	0.780	2.179			
Women Empowerment (WE)	WE1	0.757	1.533			
	WE2	0.891	3.082	0.886	0.923	0.750
	WE3	0.897	3.138			
	WE4	0.908	3.497			

Source: Primary Data

All the values exceeded the recommended threshold of 0.70, indicating strong internal consistency among the items of each construct (Hair

et. al, 2016). Additionally, all the outer loadings are above 0.70, strengthening the indicator's reliability. The VIF values for all the indicators are below the

threshold of 5, which confirms the absence of multicollinearity. The VIF values for all the indicators are below

the threshold of 5, which confirms the absence of multicollinearity.

**Table 3: Fornell-Larcker Criterion (Discriminant Validity)**

	<b>Decision Making</b>	<b>Personal Independence</b>	<b>Social Status and Security</b>	<b>Women Empowerment</b>
Decision Making	0.856			
Personal Independence	0.296	0.654		
Social Status and Security	0.557	0.352	0.799	
Women Empowerment	0.276	0.561	0.331	0.866

Source: Primary Data

Table 3 shows the Fornell-Larcker criterion that assesses the discriminant validity among the constructs through the comparison of square root of the Average Variance Extracted (AVE) for each construct with the correlations of the constructs. It is seen in the table that all the diagonal values of Decision-Making (0.856), Personal Independence (0.654), Social

Status and Security (0.799) and Women Empowerment (0.866) are higher than their corresponding inter-construct correlations. This is an indicator that each construct shares more variance with its own indicators than with the other constructs, which confirms the acceptable discriminant validity in the measurement model.

**Table 4: Heterotrait-Monotrait (HTMT) Matrix**

	<b>Decision Making</b>	<b>Personal Independence</b>	<b>Social Status and Security</b>	<b>Women Empowerment</b>
Decision Making				
Personal Independence	0.320			
Social Status and Security	0.606	0.386		
Women Empowerment	0.303	0.651	0.368	

Source: Primary Data

Table 4 shows the HTMT Ratio, which was calculated to assess the discriminant validity of the constructs, considering it to be a more stringent and reliable measure compared to traditional criteria such as the Fornell-

Larcker criterion. The construct pairs displayed the HTMT ratio below the threshold limit of 0.85, which shows that constructs are empirically different from each other, indicating a good discriminant validity (Henseler et al.,2015).

**Table 5: Cross Loadings/Outer Loadings**

	<b>Decision Making</b>	<b>Personal Independence</b>	<b>Social Status and Security</b>	<b>Women Empowerment</b>
DM1	0.842	0.253	0.52	0.23
DM2	0.833	0.251	0.466	0.23
DM3	0.859	0.194	0.484	0.168
DM4	0.863	0.277	0.453	0.266
DM5	0.879	0.276	0.465	0.264
DM6	0.859	0.266	0.471	0.255
PI1	0.286	0.776	0.274	0.654
PI2	0.181	0.869	0.28	0.597
PI3	0.228	0.884	0.269	0.501
PI4	0.257	0.88	0.319	0.498
PI5	0.304	0.861	0.355	0.666
SSS1	0.429	0.265	0.781	0.252
SSS2	0.386	0.259	0.779	0.239
SSS3	0.466	0.278	0.815	0.257
SSS4	0.472	0.261	0.814	0.245
SSS5	0.447	0.285	0.846	0.273
SSS6	0.482	0.351	0.774	0.326
SSS7	0.424	0.266	0.78	0.255
WE1	0.286	0.304	0.274	0.757
WE2	0.181	0.408	0.28	0.891
WE3	0.228	0.452	0.269	0.897
WE4	0.257	0.345	0.319	0.908

Source: Primary Data

Table 5 shows the cross loadings among the constructs, which provides evidence of discriminant validity, a key criterion in estimating the outer measurement model in PLS-SEM. Each indicator should load highest on its associated latent construct compared to others and in the table, it is evident that all items measuring Decision-Making (DM1–DM6) have high loadings on the Decision-Making construct (ranging from 0.833 to 0.879) and considerably lower loadings on other constructs, confirming their strong association with their intended latent variable. Similarly, the items for Personal Independence (PI1–PI5) load highest on their own construct (0.776 to 0.884), the same is

applicable to the construct of Social Status and Security (SSS1–SSS7) with loadings between 0.774 and 0.846 and Women Empowerment items (WE1–WE4) with loadings from 0.757 to 0.908. Overall, the indicators show stronger associations with their respective constructs than with others, supporting the construct validity of the measurement model.

The hypothesis confirming a significant relationship between social empowerment and women's empowerment is substantiated, establishing social empowerment as a key driver through decision-making, personal independence, social status and security.

5.2 Structural Model

Table 6: Hypothesis Testing

	Path Coefficient ( $\beta$ )	t-value	p-value	Result
Health and Maternity Schemes -> Social Empowerment	0.311	6.680	0.000	Supported
Social Empowerment -> Women Empowerment	0.654	16.459	0.000	Supported

Source: Primary Data

This validates empowerment's embeddedness in social dynamics; mobility, community acceptance and gender parity beyond economic realms (Sabarwal et al., 2013; Ahuru, 2019). Socially empowered women secure equitable treatment, social protection, legal and community support, resonating with literature on

recognition's centrality (Sen, 1997; Narayan, 2005). Results demonstrate enhanced autonomy, mobility, expression and employment agency via robust social networks and respect (Kabeer, 1999), positioning social empowerment as equally vital to economic factors for gender equality.

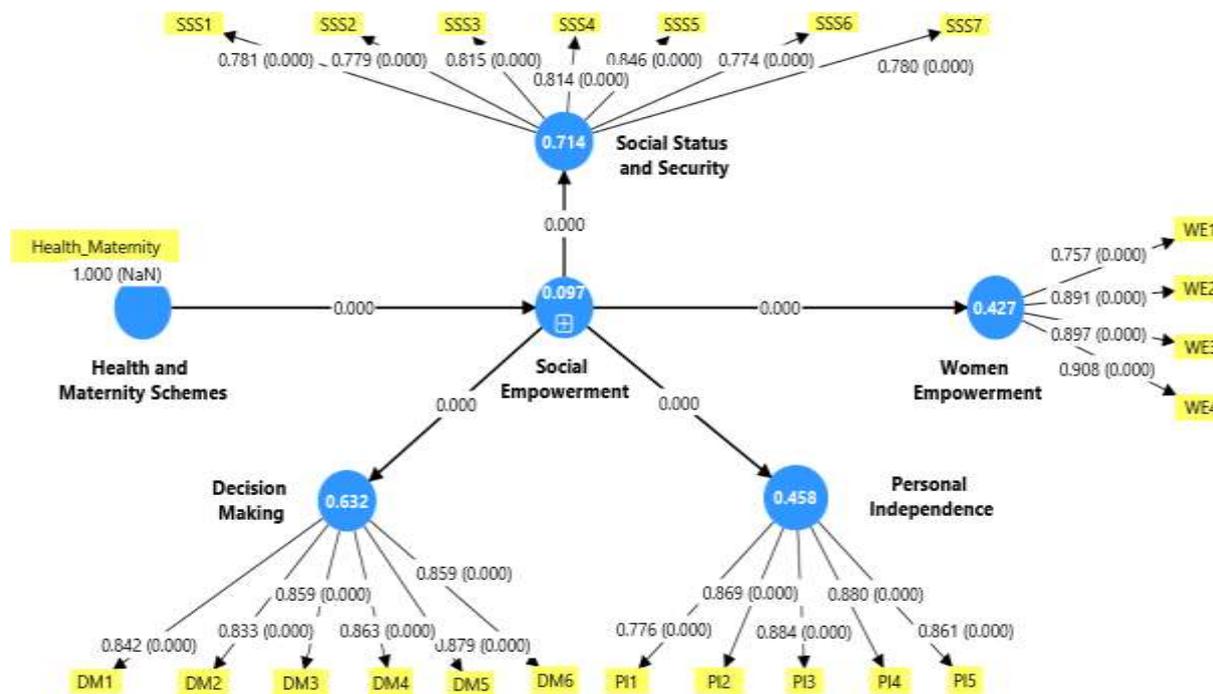


Figure 2: PLS-SEM Analysis

6. Conclusion

This study highlights health and maternity schemes' role in fostering social empowerment among women beneficiaries in Goa. Empirical evidence shows these initiatives meet healthcare needs while boosting the key

empowerment dimensions of self-efficacy, decision-making, independence, social status and security (Kumar & Gupta, 2020; Karim et al., 2014). They dismantle barriers, enabling participation in family and society, aligning with Kabeer's (1999)

framework of empowerment via decision and resource control. Empowered women gain autonomy in family, financial and personal domains, with decision-making as a core indicator (Coley et al., 2021).

Interventions should prioritise awareness, accessibility and community engagement (Bajpai et al., 2019), affirming women's identities through participation (Dutt & Samanta, 2002). Policies recommend sustained maternal healthcare investment for pregnancy, delivery and postnatal care to promote institutional deliveries and overall empowerment of women beneficiaries.

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# Navigating the Nexus: How Working Capital Management Influences Profitability in Nifty Pharmaceutical Companies

**Disha Singh**

Research Scholar, Faculty of Commerce  
Banaras Hindu University, Varanasi, India  
disha.235@bhu.ac.in

## Abstract:

*Effective working capital management is a key driver in shaping a company's financial performance and profitability. It focuses on managing short-term assets and liabilities to ensure that a business has enough cash flow to cover its immediate commitments and operational demands. The purpose of this study is to assess the relationship between working capital management and the profitability of pharmaceutical companies in India. For the empirical analysis, data from 20 pharmaceutical companies listed in Nifty Pharma were considered spanning a decade i.e, 2014-15 to 2023-24. The results are estimated using a multivariate panel data regression technique. The analysis was conducted using pooled ordinary least squares (POLS). To validate the results of the POLS approach, a post-estimation Breusch-Pagan Lagrange Multiplier test was employed, which ultimately led to the rejection of the null hypothesis. Additionally, the research analyzed the suitability of the fixed effects model versus the random effects model through the Hausman test. The study indicates that the random effects model is better suited than the fixed effects model.*

**Keywords:** Breusch- Pagan, Hausman Test, Panel data, Profitability, Random effect model, Working Capital Management.

## 1. Introduction

The idea of working capital was originally introduced by Karl Marx, albeit in different forms, and was called "variable capital" (Bhattacharya, 2009). Subsequently, Guthman and Dougall (1948) defined working capital as the difference between current assets and current liabilities, with further analysis provided by Park and Gladson (1963). Effective working capital management enhances financial performance by supporting smooth daily operations and enabling firms to capture opportunities. Maintaining an optimal balance between profitability and liquidity is crucial, though managing day-to-day liquidity remains a key challenge for managers. Any

imbalance between current assets and current liabilities can significantly impact the firm's growth and performance (Dr. Muhammad Azam, 2011). When financed through long-term sources, it can increase the company's burdens and costs, ultimately leading to a negative impact on profitability (Subramanyam, 2014). Working capital management (WCM) presents a significant challenge for companies, as it is essential for maintaining an adequate level of liquidity to meet short-term financial obligations arising from operational financing. Effectively managing working capital ensures business continuity and helps maximize profitability (Aldubhani et al, 2022). Holding excessive current assets can result in

diminished returns on a company's overall short-term investments. Conversely, having too few current assets can expose the firm to challenges, including operational mismanagement, a decreased ability to fulfill short-term financial obligations, and heightened liquidity risks (Nguyen et al., 2020).

Historically, corporate finance has centered on analyzing long-term choices, particularly regarding capital structure, dividend policies, and investment strategies (Afza & Nazir, 2008). However, by leveraging working capital management and evaluating the working capital alongside the cash conversion cycle, companies can effectively manage their daily operations. This strategy not only helps them fulfill short-term commitments but also boosts their profitability (Padachi, 2006).

### 1.1 Overview of the Pharmaceutical Sector in India

India's pharmaceutical sector holds a strong global position, with notable leadership in generics, OTC products, active pharmaceutical ingredients, vaccines, contract research and manufacturing services, as well as biosimilars and biologics. India is also a global leader in generic medicine production, capturing 20% of the market share by volume worldwide and hosting the largest number of US-FDA-approved pharmaceutical facilities outside the United States. With over 3,000 companies and 10,500 manufacturing units, the pharmaceutical industry benefits from a highly skilled workforce.

In the pharmaceutical sector, full FDI is allowed under the automatic route for greenfield projects, while brownfield projects permit up to 74% automatically, with higher investment subject to government approval. Valued

at around \$50 billion at present, India's pharmaceutical industry is projected to expand to about \$65 billion by 2024 and further surge to nearly \$130 billion by 2030. The country exports to over 200 nations, supplies about 60% of global vaccines, and provides 70% of the vaccines in the WHO's essential immunization schedule, including DPT, BCG, and measles vaccines (Invest India, 2024).

### 1. Literature Review related to our study

A Literature review involves summarizing and assessing current research on a particular subject. It identifies and examines important research, theories, and discoveries, laying the groundwork for future studies.

#### 1.1 Review Based on working capital management

According to (Chadda 1964) The study on Indian firms found fragmented inventory management and recommended using modern methods, like operations research, to improve working capital efficiency. Sarma and Chary (1999), in their analysis of VST Industries Ltd., reported weak working capital management due to the absence of a clear investment and financing policy. The firm also failed to exploit tools such as trading on equity and hedging to improve working capital efficiency. Shroff (2013) found that trade receivables form the largest component of current assets, highlighting their key role in current asset management efficiency. The study also examined changes in working capital policy through trends in related ratios. Brealey et al. (2013) note that holding excess inventory is costly, as it ties up non-earning capital and increases storage and insurance

expenses. **Shin and Soenen (1998)** compared the financial data and capital structures of Kmart and Wal-Mart and found strong similarities in sales, assets, equity, and debt profiles. **Farris II and Hutchinson (2002)** argue that competitor analysis helps managers benchmark performance and design firm-specific strategies. They also emphasize that improved liquidity achieved through a shorter cash conversion cycle can increase firm value by lowering capital locked in working capital.

## 2.2 Review Based on Financial Performance:

**Reddy (1983)** evaluated the profitability of the Indian paper industry by referencing financial data from joint-stock companies in India. The results reveal a strong and statistically meaningful positive association between growth and profitability within the paper industry. **Kim and Kunchul (1996)** explored how profitability, growth, and risk are interconnected, aiming to grasp the differences in profitability through their mutual relationships. **Rei and Sur (2001)** analyzed the interrelationships among profitability ratios using multiple correlation and regression techniques, finding both positive and negative associations with firm position, performance, and overall profitability. According to **Krishna Prasad Upadhyay (2004)** Various financial ratios were employed to evaluate the financial performance of the chosen finance companies. Specifically, the study utilized solvency ratios, liquidity ratios, efficiency ratios, profitability ratios, and valuation ratios. **Shrabanti Pal (2012)** emphasized that firms must strengthen liquidity, solvency, and operational efficiency to enhance profitability, warning that neglecting

these areas may erode financial performance. **Neol Capon et al., (1996)** recognizes the minimum efficient scale of industries, geographic distribution of production, barriers to entry, and economies of scale as factors that positively influence performance. In conclusion, the findings align with industrial organization theory.

## 2.3 Review Based on working capital management and Financial Performance:

**Deloof (2003)** analyzed firm data from 1992–1996 and found that extended receivable, inventory, and payable periods are linked to poorer performance, while shortening inventory and receivable cycles improves shareholder value, despite profitable firms tending to delay payments. **Azam and Haider (2011)** revealed that liquidity has a negative impact on firm performance, whereas the debt ratio demonstrates a positive effect on performance. **Nguyen and Nguyen (2018)** examined Vietnamese listed firms over 2008–2014 and found that more effective working capital management is associated with higher profitability. **Amponsah-Kwatiah and Asiamah (2020)** similarly reported that, among Ghanaian listed manufacturing firms, improvements in working capital components are positively linked to profitability. According to **Dalci et al. (2019)** decreasing the length of the cash conversion cycle has a beneficial effect on the profits of small and medium-sized businesses. This result was achieved through a range of approaches such as pooled OLS, fixed effects, random effects, and GMM techniques. **Mahmood et al. (2019)** found an inverted U-shaped relationship between working capital and profitability by applying the generalized method of

moments (GMM) methodology to a sample of Chinese firms from 2000 to 2017. Similarly, **Laghari and Chengang (2019)** also reported empirical evidence of this inverted U-shaped relationship for Chinese listed companies, utilizing the same GMM approach. **Seth et.al (2020)** are likely among the first to address potential endogeneity issues by assessing the influence of various exogenous variables on working capital management efficiency and firm performance. **Kabuye et al. (2019)** analyzed 110 Ugandan supermarkets and found that effective working capital management, alongside internal control systems, plays a key role in determining financial performance.

### 3. Research Methodology

**3.1 Research Design:** This study analyzes the effect of working capital management on profitability using panel data from 20 Nifty Pharma Index firms, drawn from the CMIE Prowess database for the period 2014–15 to 2023–24.

### 3.2 Description of Variables used in the Study

#### 3.2.1: Dependent Variable (Profitability)

Profitability measures a firm's ability to generate profit and indicates how efficiently management uses resources to increase business value. **Ebabu Engidaw (2021)** suggests that firms should assess performance using both financial and non-financial measures to gauge goal attainment. Return on assets reflects how efficiently management utilizes company resources to generate returns. It is calculated as:

Return on Asset (ROA)= Net Income (Profit after tax)/ Total Asset (**Bagh et al., 2016**)

#### 3.2.2: Independent Variables (Working Capital Management)

Working capital management ratios are financial tools used to evaluate how effectively a company handles its short-term assets and liabilities. These ratios help assess a firm's liquidity, operating efficiency, and financial stability. This study employs four independent variables.

- ❖ **Quick Ratio (Q.R):** A more conservative measure of liquidity that excludes inventory from assets to determine if a company can pay off short-term liabilities without selling inventory.
- ❖ **Inventory Conversion Period (ICP):** The inventory conversion period (days inventory outstanding) represents the average number of days a firm takes to sell its inventory and is a key indicator of inventory efficiency within the cash conversion cycle.
- ❖ **Debtor Collection Period (DCP):** The debt collection period (accounts receivable period) measures the average time a firm takes to collect cash from customers after credit sales, reflecting how efficiently receivables are converted into cash and managed for liquidity.
- ❖ **Cash Conversion Cycle (CCC):** The Cash Conversion Cycle (CCC) serves as a vital financial gauge, capturing the duration a company needs to turn its investments in inventory and other resources into actual cash from sales. This metric effectively reveals the efficiency with which a company oversees its working capital.

#### 3.2.3: Control Variables

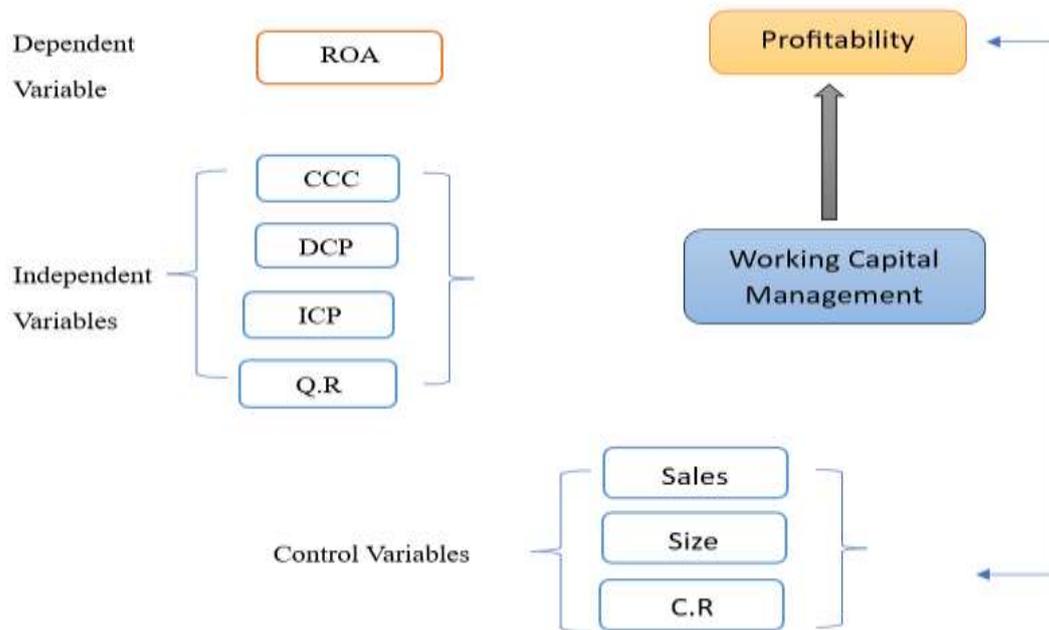
- ❖ **Sales:** Including sales as a control variable helps isolate the effects of other independent variables on the dependent variable by accounting for variations in sales, allowing

clearer interpretation of relationships.

❖ **Firm Size:** Firm size refers to the scale or magnitude of a company, often measured in various ways. In our study we have calculated it as natural logarithm of total asset.

❖ **Current Ratio (C.R):** Current assets are resources that a company anticipates will be transformed into cash or utilized within a year or its operating cycle, whichever is longer. These assets are vital for ensuring the company's liquidity and enhancing its operational efficiency.

### 3.3 Conceptual Framework of the Study



Source: Author own Compilation

### 3.4 Statistical Tools/ Techniques

The study uses descriptive statistics and correlation analysis to assess multicollinearity, while panel unit root tests, Levin-Lin-Chu, Im-Pesaran-Shin W-stat, ADF-Fisher, and PP-Fisher ensure data stability. Testing for heteroskedasticity is essential in panel data analysis, as its presence can lead to biased and inefficient coefficient estimates. Accordingly, the Breusch-Pagan-Godfrey and Harvey tests are applied. To examine the effect of working capital management on profitability in pharmaceutical firms, panel regression models—pooled OLS, fixed effects, and random effects are estimated. The Breusch-Pagan Lagrange Multiplier test is used to assess the

suitability of pooled OLS, followed by the Hausman (1978) test to select between fixed and random effects models.

#### Framework of the Empirical Model:

$$ROA_{it} = \alpha + \beta_1 (CCC)_{it} + \beta_2 (ICP)_{it} + \beta_3 (DCP)_{it} + \beta_4 (QR)_{it} + \beta_5 (Sales)_{it} + \beta_6 (Size)_{it} + \beta_7 (CR)_{it} + \mu_i + \varepsilon \dots\dots\dots \text{(equation 1)}$$

Where, 'i' denote the companies, 't' denotes the year, 'a' is the intercept, 'β' is the coefficient of independent and control variable, 'μ' is the unobserved time variant and 'ε' is the error term.

#### 4. Hypotheses of the Study

H1: CCC shows no statistically significant effect on ROA

H2: DCP shows no statistically significant effect on ROA

H3: ICP shows no statistically significant effect on ROA

H4: QR shows no statistically significant effect on ROA

H5: Size shows no statistically significant effect on ROA

H6: C.R shows no statistically significant effect on ROA

H7: Sales shows no statistically significant effect on ROA

**5. Results and Findings**

The study begins with descriptive statistics which help us to know the nature of the variables followed by

correlation analysis. To check for the stationarity of data, different panel data unit root test has been considered in our study followed by Breusch- Pagan- Godfrey / Harvey Test for Heteroskedasticity. The examination was carried out using combined ordinary least squares (OLS), Lagrange Multiplier Tests for Random Effects was used for the estimation. The suitability of fixed effects relative to random effects was evaluated using the Hausman test. All the statistics used in our study are discussed below:

**Table 1: Descriptive statistics of the Variables**

	ROA	CCC	DCP	ICP	QR	SIZE	CR	SALES
Mean	10.28	20.71	88.68	37.01	1.57	9.02	2.33	6104.98
Median	9.88	24.34	87.96	34.98	1.31	9.06	1.90	4846.03
Maximum	23.48	107.56	268.33	83.80	7.74	10.74	9.85	21380.92
Minimum	-3.78	-82.00	15.40	4.31	0.24	7.01	0.44	628.18
Std. Dev.	5.27	37.02	43.52	19.36	1.12	0.90	1.50	43331.43
Observations	200	200	200	200	200	200	200	200

Source: Eviews 12 output

The mean ROA is 10.28 with a standard deviation of 5.27, ranging from -3.78 to 23.48. Firms exhibit an average cash conversion cycle of 20 days, with receivables collected in about 88 days (SD = 43), while inventory is converted in roughly 37 days. The mean quick

ratio is 1.57. Liquidity, measured by the current ratio, averages 2.33 with a standard deviation of 1.50. Firm size, proxied by the natural log of sales, has a mean of 9.02 (SD = 0.90), with logged sales ranging from 628.18 to 21,380.92.

**Table 2: Correlation Matrix between the variables**

Variables	ROA	CCC	DCP	ICP	QR	CR	Sales	Size
ROA	1							
CCC	-0.067	1.000						
DCP	-0.345	0.310	1.000					
ICP	0.139	-0.045	-0.602	1.000				
Q.R	0.265	0.117	-0.013	-0.198	1.000			
C.R	-0.239	0.145	-0.046	-0.163	0.780	1.000		
Sales	-0.132	0.261	0.378	-0.036	-0.075	-0.070	1.000	
Size	-0.284	0.162	0.539	-0.176	0.020	0.021	0.726	1

Source: Eviews 12 output

**Churchill and Iacobucci (2005)** note that multicollinearity reduces the explanatory power of variables. In this study, ROA correlates positively with inventory conversion and quick ratio, but negatively with cash conversion cycle, debt collection, current ratio, sales, and firm size. The cash conversion

cycle is positively linked to debt collection, liquidity, sales, and size, and negatively to inventory conversion, while debt collection correlates positively with sales and size but negatively with inventory conversion and liquidity ratios.

**Table 3: Results of Panel Unit Root Test**

	Levin, Lin, and Chu Test	Im, Pesaran and Shin W-Statistics	ADF-Fisher chi-square	PP-Fisher Chi-square	Results
<i>Statistics with P Values</i>					
ROA	-6.09266 (0.0000)	-2.83756 (0.0023)	80.8686 (0.0001)	56.4147 (0.0442)	<b>No unit root</b>
CCC	-7.09689 (0.0000)	-2.46755 (0.0068)	68.3782 (0.0034)	104.900 (0.0000)	<b>No unit root</b>
DCP	-13.5798 (0.0000)	-3.52069 (0.0002)	78.4546 (0.0003)	125.094 (0.0000)	<b>No unit root</b>
ICP	-10.3761 (0.0000)	-3.40374 (0.0003)	84.3858 (0.0001)	115.312 (0.0000)	<b>No unit root</b>
Q.R	-1.79252 (0.0365)	-1.76148 (0.0391)	59.7880 (0.0228)	228.216 (0.0000)	<b>No unit root</b>
C.R	-9.27093 (0.0000)	-2.80215 (0.0025)	70.7106 (0.0020)	149.905 (0.0000)	<b>No unit root</b>
Sales	-5.95271 (0.00000)	-2.92993 (0.0017)	76.1518 (0.0005)	253.246 (0.0000)	<b>No unit root</b>
Size	-7.89336 (0.0000)	-3.49570 (0.0002)	81.9627 (0.0000)	207.855 (0.0000)	<b>No unit root</b>

Source: Eviews 12 output

Panel unit root tests were conducted to verify the stationarity of panel data before estimation. The analysis employs the Levin-Lin-Chu, Im-Pesaran-Shin,

ADF-Fisher, and PP-Fisher approaches. The results indicate that all variables are stationary, as their p-values are below 0.05.

**Table 4: Test for Heteroskedasticity**

Heteroskedasticity Test: Breusch- Pagan- Godfrey / Harvey Test		
Null Hypothesis: Homoskedasticity		
	Breusch- Pagan- Godfrey	Harvey Test
F- Statistics	1.801209	0.987459
Obs R- squared	12.32448	6.950016
Scaled explained SS	14.10003	6.736170
Prob. F (7, 192)	0.0890	0.4416
Prob. Chi- Square (7)	0.0904	0.4341

Source: Eviews 12 output

The study uses two test to calculate heteroskedasticity. The above table shows that the SS version explained by the scale of F,  $\chi^2$

statistics and test statistics come to the same conclusion, revealing the absence of heteroscedasticity as in all cases the p-values are greater than 0.05.

**Table 5: Pooled Ordinary Least Square (POLS)**

<b>Dependent Variables: ROA</b>				
Method: Pooled Ordinary Least Squares (POLS)				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>C</b>	33.68849	5.766063	5.842547	0.0000
<b>CCC</b>	-0.010637	0.010466	-1.016264	0.3108
<b>DCP</b>	-0.022581	0.012868	-1.754863	0.0809
<b>ICP</b>	0.000703	0.023439	0.029983	0.9761
<b>QR</b>	0.409537	1.526623	0.268263	0.7888
<b>Sales</b>	0.000487	0.000146	3.327472	0.0011
<b>Size</b>	-2.959881	0.766315	-3.862485	0.0002
<b>CR</b>	0.804259	1.153696	0.697115	0.4866
<b>R-squared</b>	0.246580	<i>Mean dependent var</i>		10.28487
<b>Adjusted R-squared</b>	0.219112	<i>S.D. dependent var</i>		5.271406
<b>S.E. of regression</b>	4.658230	<i>Akaike info criterion</i>		5.954326
<b>Sum squared resid</b>	4166.228	<i>Schwarz criterion</i>		6.086259
<b>Log likelihood</b>	-587.4326	<i>Hannan-Quinn criter.</i>		6.007717
<b>F-statistic</b>	8.976856	<i>Durbin-Watson stat</i>		1.063472
<b>Prob (F-statistic)</b>	0.000000			

Source: Eviews 12 output

The results for pooled data are displayed in the above table. Our dependent variable, ROA has a negative relationship with CCC and DCP but a positive relationship with ICP and Sales. ROA does not significantly correlate with size, CR, or QR. The results are examined for panel effect since the data may have a fixed effect or a random effect.

As the p value for Breush pagan test is less than 0.05 so we reject the null hypothesis which means that Pooled OLS is not stable. Selecting the

appropriate panel regression approach requires evaluating whether unobserved heterogeneity is better captured through fixed effects or treated as random effects.

**Table 6: Breusch- Pagan Test**

<b>Lagrange Multiplier Tests for Random Effects</b>
<b>Null hypotheses: No effects</b>
<b>Breusch-Pagan 32.24912 (0.0000)</b>

Source: Eviews 12 output

**Table 7: Fixed Effect Model Estimation**

<b>Dependent Variables: ROA</b>				
<b>Method: Fixed Effect Model</b>				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>C</b>	37.99270	8.047269	4.721191	0.0000
<b>CCC</b>	-0.017609	0.014318	-1.229838	0.2204
<b>DCP</b>	-0.046917	0.044484	-1.054686	0.2930
<b>ICP</b>	0.019520	0.016147	1.208863	0.2284
<b>QR</b>	2.982413	2.381394	1.252381	0.2121
<b>Sales</b>	-2.072923	1.925670	-1.076469	0.2832
<b>Size</b>	0.000751	0.000180	4.177744	0.0000
<b>CR</b>	-3.523444	1.006973	-3.499047	0.0006
<i>R-squared</i>	0.501699	<i>Mean dependent var</i>		10.28487
<i>Adjusted R-squared</i>	0.426810	<i>S.D. dependent var</i>		5.271406
<i>S.E. of regression</i>	3.990945	<i>Akaike info criterion</i>		5.730907
<i>Sum squared resid</i>	2755.482	<i>Schwarz criterion</i>		6.176180
<i>Log likelihood</i>	-546.0907	<i>Hannan-Quinn criter.</i>		5.911102
<i>F-statistic</i>	6.699224	<i>Durbin-Watson stat</i>		1.457065
<i>Prob(F-statistic)</i>	0.000000			

Source: Eviews 12 output

**Table 8: Random Effect Model Estimation**

<b>Dependent Variables: ROA</b>				
<b>Method: Random Effect Model</b>				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>C</b>	39.68829	6.715488	5.909964	0.0000
<b>CCC</b>	-0.016437	0.012362	-1.329666	0.0052
<b>DCP</b>	-0.002865	0.013890	-0.206281	0.0368
<b>ICP</b>	-0.003640	0.029561	-0.123148	0.9021
<b>QR</b>	1.627199	1.904182	0.854540	0.01939
<b>SALES</b>	0.000645	0.000160	4.036530	0.0001
<b>SIZE</b>	-3.770466	0.859118	-4.388763	0.0000
<b>CR</b>	-0.499002	1.501291	-0.332382	0.7400
<i>R-squared</i>	0.132448	<i>Mean dependent var</i>		4.467828
<i>Adjusted R-squared</i>	0.100818	<i>S.D. dependent var</i>		4.273502
<i>S.E. of regression</i>	4.052357	<i>Durbin-Watson stat</i>		1.331508
<i>F-statistic</i>	4.187468	<i>Sum squared resid</i>		3152.947
<i>Prob(F-statistic)</i>	0.000257	<i>Durbin-Watson stat</i>		1.331508

Source: Eviews 12 output

**Table 9: Result for Hausman Test**

<b>Correlated Random Effects - Hausman Test Equation</b>			
<b>Test cross-section random effects</b>			
<b>Test Summary</b>	<b>Chi-Sq. Statistic</b>	<b>Chi-Sq. d.f.</b>	<b>Prob.</b>
<b>Cross-section random</b>	12.954414	7	0.0732

**Source: Eviews 12 output**

Since the p-value exceeds 0.05, we do not reject the null hypothesis, indicating that the random effects model is more suitable (Oberleitner et al., 2023); (Mengstie et al., 2024).

### 6. Conclusion:

The pharmaceutical sector in India is a key player in the global healthcare landscape, recognized for its significant contributions to drug production and innovation. The purpose of this study is to investigate how WCM affects the profitability of pharmaceutical businesses that are listed on the Nifty. Data was collected from CMIE Prowess for a duration of 10 years. According to **Raheman and Nasr (2007)** effective working capital management (WCM) is a crucial component of financial stewardship, playing a vital role in enhancing a company's wealth generation by directly impacting both its profitability and liquidity. Prior to panel regression, multicollinearity and unit root diagnostics were performed. The random effects model was chosen since the p-value was above 0.05. Under the random effects specification, the quick ratio and debtors' turnover ratio emerge as statistically significant positive drivers of ROA, with both coefficients significant at the 5% level (**Paul and Mitra 2018**). Cash conversion cycle has a negative impact on profitability **Deloof (2003)**, **khan et al. (2020)**. There is no impact of Inventory

conversion period on return on asset **Mahalwala and Ahuja (2023)**. According to the results of this study, companies are recommended to maintain their working capital components at optimal levels in order to efficiently oversee their operations. Effective utilization and managing of these components is crucial as they greatly affect profitability. This research will contribute to the current knowledge by showing how pharmaceutical firms improve their working capital management to enhance business profitability in a successful and efficient manner.

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## Eco Tourism in Maharashtra: Opportunities and Challenges for Sustainable Development

**Shubham Namdeo Ambekar**

Research Scholar

P. G. Department of Economic

Govt. Vidarbha Institute of Science & Humanities (Autonomous), mravati.

Email: [shubambekar1997@gmail.com](mailto:shubambekar1997@gmail.com)

**Dr. Laxman Rambhau Mhaske**

Head & Assistant Professor,

P. G. Department of Economics

Govt. Vidarbha Institute of Science & Humanities (Autonomous), Amravati

Email: [dnyanlaksh81@gmail.com](mailto:dnyanlaksh81@gmail.com)

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### Abstract:

*Eco tourism in Maharashtra has become a potent tool of sustainable development through unity of conservation of the environment, economic development and social welfare. The variety of ecosystems and the high cultural heritage of the state provide a lot of potential to develop ecotourism. The results indicate that eco tourism facilitates the creation of employment opportunities, rural development and conservation finance besides increasing environmental awareness of local people. Nevertheless, overtourism, inadequate infrastructure, environmental degradation, and poor stakeholder coordination among others are some complications in ways of having sustainable improvements. Policies by the government and involvement by the community play a pivotal role in tackling such issues and enhancing the management practices. It concludes that ecotourism, when done with the right mindset, may be an important instrument in preserving the natural resources and the realization of the sustainable development agendas in Maharashtra.*

**Keywords:** *Eco tourism, Sustainable development, Biodiversity conservation, Community empowerment*

### Introduction:

Eco tourism, which is an important type of sustainable tourism, focuses on the preservation of natural resources, conservation of the environment, and the appreciation of local culture and society. It has come out as a vital alternative to mass tourism which in most cases causes environment degradation, biodiversity loss and strain on natural environment. Eco tourism facilitates sustainable development by creating revenue but also conserving the ecosystem and wildlife and uplifting the locals. Sustainable development is a position that the current needs are fulfilled without undermining the needs of future generations without ruining the economy, environment, and social pillars. This solution is connected to the

ecotourism principles as well as it connects the human wellbeing and conserving the environment. Maharashtra has huge eco tourism potential and has different landscapes, coastline, hill stations, dense forests, wildlife parks and a rich cultural heritage. Biodiversity that is characteristic of the national parks and the forested areas like Tadoba, Sanjay Gandhi National Park, and other forested areas also attract nature-based tourism. The ecotourism is unique in Maharashtra because of the 400 km long coastline, historic forts, tribal culture, and rural scenic formations.

### Research Objectives:

- ◆ To study the role and potential of ecotourism in advancing sustainable development in Maharashtra.

- ◆ Analyse key provisions and the impact of the Maharashtra Tourism Policy 2024 and DCEL investments on ecotourism growth.
- ◆ Identify significant challenges in ecotourism development, including environmental degradation, pollution, and lack of infrastructure.
- ◆ Evaluate the economic, environmental, and social impact of ecotourism on local communities, employment generation, and conservation.
- ◆ To suggest effective policy strategies and community-based solutions to strengthen ecotourism and ensure environmental integrity.

#### Research Methodology:

The research design used in this study is descriptive-analytical research design in exploring the opportunities and the obstacles of eco tourism in Maharashtra in the context of sustainable development. The study relies mainly on the secondary sources of data such as books, journals, research publications, government reports, the Maharashtra Tourism Policy 2024, DCEL investment reports, valid websites, and news articles. The research has recognized some of the limitations such as time, reliance on the quality and validity of secondary data and the inability to access remote ecotourism sites. The anticipated research findings are the formulation of viable research policies and viable strategies that can empower eco tourism programs and promote sustainable tourism in Maharashtra.

#### Literature Review:

Eco tourism has been commonly identified as a policy that enables the tourism development to balance with the environment conservation and community wellbeing. Research studies

globally emphasize the role of ecotourism in ensuring sustainable development whereby economic benefits are attained without impacting the degradation of the natural resources. Honey (2008) and Fennell (2008) highlight that eco tourism reduces the effects of ecological impact but provides support to the local communities and ensures balanced ecology when it is under good management. The global studies have shown that ecotourism promotes environmental awareness and responsibility, and this is a necessary strategy in areas with biodiversity.

Eco tourism has expanded rapidly in India during the past twenty years especially in some states like Kerala, Uttarakhand, and Maharashtra (Sharma and Chhetri, 2016). According to Ghosh (2014), it has been growing faster due to the growing environmental awareness and conservation-based policies.

The literature also differentiates eco tourism and sustainable tourism where ecotourism is considered as responsible tourism conducted to the natural environment without degrading the environment and without adversely affecting local communities (Ceballos-Lascurain, 1996). Sustainable tourism on the contrary is a wider framework concerned with long-term environmental, cultural and economic sustainability (UNWTO, 2004).

The trends in eco tourism in India are directly related to the conservation policies of the country including National Eco tourism Policy (2002). Tadoba Tiger reserve, Sanjay Gandhi national park, Mahabaleshwar and Matheran are some destinations in Maharashtra that can be considered as a good eco tourist destination. Nonetheless, Chavan and Pandit (2018)

claim that to realise this potential, it is essential to consider the environmental threats, limitations of infrastructure, and problematic issues with the participation of communities.

**Maharashtra Tourism Policy 2024:**

The Maharashtra Tourism Policy is aimed at enhancing cultural and sustainable tourism to position the state in the world tourist destination. The policy is focused on increasing tourist numbers by 2 times and creating 18 lakh jobs and developing new tourist destinations with an investment target of INR 1 lakh crore. Some of the key initiatives are Marine and River Tourism, promotion of Rural Tourism and developing 50 major tourism destinations via Special Tourism Area Program. Such software as Tourism Mitra increases the safety and experience of any visitor and a range of tourism policies has already accepted more than 2,000 applications in various industries. Overall, the policy aims at enhancing the tourism infrastructure, promoting investment in the sector by individuals and promoting the growth of tourism based on community and sustainability.

**Table 1: Number of applications approved under various tourism policies (2024):**

Policy	Applications Approved
Single Window Clearance for the Hospitality Sector	206
Agro-Tourism Policy	833
Adventure Tourism Policy	584
Caravan Tourism Policy	8
Women-Oriented Tourism Policy	432

(Source: Economic Survey of Maharashtra, 2024-2025, Page No.146)

According to the table above, the most approved applications were the Agro-Tourism Policy (833) which shows that rural and farm-based tourism is in

high demands. Adventure Tourism is not an exception as it is extremely popular with 584 approvals which says about the demand on outdoor and recreational activities. It was observed that 432 approvals were received on the Women-Oriented Tourism Policy which indicated a positive involvement and encouragement of women in tourism entrepreneurship. The Hospitality Sector Single Window Clearance has 206 approvals and assists in streamlining investment in hotels and services associated with it. Caravan Tourism has only eight applications, indicating a low usage, which means that more promotion and infrastructure are required. In general, the statistics demonstrate a positive outlook at the diversified and sustainable tourism development in Maharashtra.

According to the table No. 2 shows annual investments that DCEL plans to make in various tourism development heads between 2002-03 and 2021-22. It is evident that the total investment is on a rising trend over the years, which means that more focus is on the tourism infrastructure in Maharashtra. The investment areas of high order are Accommodation, tourism projects, basic and tourism infrastructure, promotion, Human Resource Management (HRM), Training, Marketing and Administration (TM and A) and other development sectors. Tourism Projects have always managed to receive the highest investment, which proves the interest that the government has towards the development of tourism facilities and attractions. There is also an increased investment in Accommodation, and this is more after 2005 indicating an improvement in the tourist accommodation facilities. Basic Infrastructure spending varies, with project-specific amounts of expenditure.

Promotion, HRM and TM & A funding is relatively constant every year, which represents supporting operational functions. This is because the total investments went up significantly after 2005-06 to the highest level of 5269.5 crore in 2018-19, which showed strong planning of tourism development. A small decrease in 2019-21 can be associated with the reduction in the

economic growth and the effect of COVID-19. The influx increases in 2021-22 once again speaks of recovery operations and the fresh attention to tourism. Overall, the statistics represent the governmental approach to the growth of tourism because of long-term planning of investments aimed at increasing the growth and stability of the economy.

**Table:2**

**Year-wise investments envisaged by DCEL under various heads**

Year	Accomm odation	Tourism Projects	Tourism Infrastru cture	Basic Infrastr ucture	Promo tion	HRM	T M & A	Others	Total
2002-2003	103.0	148.9	6.5	17.2	830.0	115.0	80.0	195.0	1495.7
03-04	149.8	1518.9	86.6	7.5	830.0	115.0	80.0	195.0	2982.7
04-05	209.1	1335.9	48.5	85.0	830.0	115.0	80.0	195.0	2898.4
05-06	588.8	2585.7	208.4	167.8	830.0	115.0	80.0	195.0	4770.8
06-07	445.1	2251.6	199.0	16.8	830.0	115.0	80.0	195.0	4132.5
07-08	669.4	1084.9	499.4	0.0	871.5	120.8	84.0	204.8	3534.7
08-09	565.3	1854.4	495.4	314.4	871.5	120.8	84.0	204.8	4510.6
09-10	642.9	1246.6	470.3	0.0	871.5	120.8	84.0	204.8	3640.8
10-11	617.8	1246.6	65.5	349.3	871.5	120.8	84.0	204.8	3560.2
11-12	1085.0	1000.0	24.9	349.3	871.5	120.8	84.0	204.8	3740.2
12-13	700.0	1238.4	170.5	349.3	915.1	126.8	88.2	215.0	3803.4
13-14	936.5	1454.8	470.0	0.0	915.1	126.8	88.2	215.0	4206.3
14-15	736.2	1454.8	470.0	0.0	915.1	126.8	88.2	215.0	4006.1
15-16	299.2	2120.1	28.5	0.0	915.1	126.8	88.2	215.0	3792.9
16-17	2160.1	1253.7	10.0	0.0	915.1	126.8	88.2	215.0	4768.9
17-18	2347.7	1224.5	170.0	0.0	960.8	133.1	92.6	225.7	5154.5
18-19	2462.7	1224.5	170.0	0.0	960.8	133.1	92.6	225.7	5269.5
19-20	1668.9	1224.5	170.0	0.0	960.8	133.1	133.1	225.7	4516.2
20-21	1434.8	1224.5	10.0	0.0	960.8	133.1	92.6	225.7	4081.7
21-22	3303.9	238.4	10.0	0.0	960.8	133.1	92.6	225.7	4964.7

(Source: Study Report on Development of Sustainable Tourism in Maharashtra, Joint Director, Dept. of Tourism, Ministry of Tourism & Culture, Delhi. Page. No. E3)

**Ecotourism in Maharashtra:**

Maharashtra is also blessed with a variety of landscapes, beaches, mountains, forests, plateaus and desert-like areas; thus, it is very suitable to ecotourism. The state has special ecosystems, along the Western Ghats and in the coastal region of Konkan, having rare plants and animals. Its topography is a variety of waterfalls, rivers, caves, the wildlife reserves, and the secured national parks. Some of the

well-known ecotourism sites are TadobaAndhari Tiger Reserve, Sanjay Gandhi National Park, Karnala Bird Sanctuary and Bhimashankar Wildlife Sanctuary. Sahyadri (Western Ghats) are known as a biodiversity hot spot in the world, and it is a glittering attraction to nature lovers and researchers all over the world. Mahabaleshwar, Matheran, Lonavala and Panchgani are some of the examples of environment-friendly tourism. Ganpatipule, Tarkarli and

Alibaug are the beautifully positioned beaches in Maharashtra that sustain marine and adventure-based eco tourism. It has nature-based tourism because of its rural lifestyle, ancient temples, historic forts, and traditional culture and heritage. The state has eco-tour packages that assist in the incorporation of sustainable tourism, conservation of wildlife, and community development.

As such, Maharashtra has great prospects of emerging as one of the leading eco tourism destinations through sustainable growth of tourism and preservation of the environment.

#### **Ecotourism and Its Potential for Sustainable Development:**

Maharashtra has a high potential of encouraging employment and rural economic development through eco tourism. Its development generates the need to offer services such as guided tours, eco-friendly Accommodation, transportation and the local handicrafts, which will bring revenues to the local communities. It encourages entrepreneurship by homestays, nature resorts and small tourism enterprises with special reference to rural regions where agricultural earnings are meagre. Therefore, ecotourism helps in reduction of poverty and promotes sustainable utilization of resources and conservation of the environment in the long run.

Another important activity of ecotourism is to preserve forests, wild animals and vulnerable ecosystems that are endangered by deforestation and building activities. The tourism activities like in Tadoba-Andhari Tiger Reserve are reinvested in habitat protection and wildlife management by relying on revenue generated by the tourism activities. It enhances sustainable activities including water

conservation, organic farming and proper utilisation of natural resources besides creating environmental awareness in tourists and communities.

Also, eco tourism enhances the power of the residents by training them in hospitality, nature guiding, better livelihoods and community involvement in conservation. It also assists in the conservation of the Maharashtra cultural heritage in terms of the popularization of the traditional arts and crafts and festivals to ensure that the cultural identity is not lost in the generations to come.

#### **Eco Tourism Development Challenges:**

Even though the main purpose of eco tourism is to promote conservation, its rate of expansion in Maharashtra has led to environmental degradation. Infrastructure development includes roads, hotels, and resorts, and causes deforestation and loss of habitat and disturbance of the wildlife in delicate regions like the Tadoba-Andhari Tiger reserve. Tourists raise waste, pollution and automobile emission that destroy soil, water bodies and biodiversity. In places like Sanjay Gandhi National Park and Mahabaleshwar over-tourism leads to the erosion of the land, water shortage, loss of vegetation, and the disturbance of the wildlife behaviour. Eco tourism will be detrimental instead of sustainable when it goes beyond ecological limits. The pressure should be minimized by effective control of the number of visitors, strict waste management, and marketing less popular sites.

Maharashtra has a good potential; however, the development of its eco tourism may be limited due to poor infrastructure and insufficient sustainable planning. Most of the destinations do not have waste

management systems, eco-friendly Accommodation as well as transport infrastructure contributing to unsustainable practices like poor disposal of waste and wasting resources. The projects are usually brief and disjointed without cohesive strategies to balance between environmental and economic objectives thus endangering ecosystems.

Effective eco tourism involves effective working of stakeholders, yet poor involvement of local community and sharing of benefits with the locals leads to conflicts between the government, the private sector, and the local population. Absence of training and capacity building means that communities can never exploit the opportunities that ecotourism presents to their fullest extent. Hence, to achieve sustainability in the long term, community participation in decision making and management is indispensable.

#### **A Policy and Planning Framework for Eco tourism in Maharashtra:**

Maharashtra has come up with great policies that facilitate eco tourism on the state and national level. MTDC has an ecotourism policy, Maharashtra Eco tourism Policy, designed to help to develop ecotourism sustainably in the conservation of biodiversity, community participation, and sustainable tourism practices. It aids in proper management of natural resources and at the same time makes sure that the local people are benefiting. On the national level, the National Ecotourism Policy 2017 advocates the ecotourism circuits, environmental education, and minimization of adverse effects. The two policy frameworks focus on benefits distribution that is fair, safeguarding natural assets and long-term sustainability thus ensuring that eco

tourism does not impact negatively on the ecological integrity.

#### **Policy Recommendations and Sustainable Tourism Development Strategies:**

The existing ecotourism policies allow the enhancement of strategic management in Maharashtra. Each of the main destinations should have a complete eco tourism management strategy, which is aimed at protecting the environment and socio-economic development. Green infrastructure (solar-powered facilities, environmentally friendly transport, and efficient waste management) needs to be invested in. To make sure that tourism operators are highly sustainable, eco-certification programs should also be introduced. Tourism incentives can be used to promote off-peak tourism and help ease the congestion during tourist seasons. There is also a need to have stronger cooperation between tourism, conservation agencies, and local governance to make sure that there are equal benefits and holistic implementation of the policies.

#### **Government and Private Sector Contributions for Ecotourism:**

The development of eco tourism in Maharashtra needs a good partnership between the government and private sector. Development of conservation-oriented tourism policies should be spearheaded by the agencies such as the MTDC and the Forest Department which should also develop incentives which will encourage the incorporation of sustainable practices by the private enterprises. The eco-friendly operations that should be facilitated by the private sector include energy efficiency, recycling of waste, and preservation of natural habitats.

Relationships with eco-resorts, tour operators and hotels may be used to build training and certification of the local people. The NGOs that are involved in environmental and cultural conservation may also cooperate with the personal stakeholders, guaranteeing the balance and sustainability of the eco tourism development in the long term.

#### **Local Community and Ecotourism:**

Local communities should be involved in eco tourism in Maharashtra to make it successful and sustainable. The policies must be such that the locals are heavily involved in the planning and decision making. The process of training community members into guides, hospitality workers and conservation workers can ensure that they acquire skills and can benefit in economic ways. The government should collaborate with the community and the business world to steer the development of eco tourism through the community-based committees. Culture can be conserved by supporting local businesses in the community such as homestays, craft shops and local food stalls which will generate revenue. Among other things, the government can also afford incentives to communities which practice sustainability so that ecotourism can have the effect of improving the environment and socio-economic development.

#### **Findings:**

- ◆ Ecotourism plays a major role in the creation of jobs, especially amongst the tribal society and the marginalised communities.
- ◆ Tourism earnings are used to assist in conservation by funding forest conservation and preservation of wildlife.
- ◆ There is still unequal participation in the community and most of the local

groups are devoid of decision making and training power.

- ◆ Excessive tourism leads to environmental destruction, especially in tourist hotspots that have a high population of tourists.
- ◆ The development of infrastructure is not even, and eco-tourism sites in the rural areas do not have eco-friendly facilities.
- ◆ Government policies are also prospective though this should be improved by means of better monitoring, enhanced transparency and more significant stakeholder alignment.
- ◆ Conservation awareness and education have enhanced knowledge of conservation between tourists and people.
- ◆ The trends of DCEL financial investments affirm a long-term investment in sustainable tourism development.
- ◆ Innovation and field level implementation has been enhanced by the participation of the private sector and the NGO.
- ◆ The ecotourism promotes the development objectives of rural regions and maintains cultural heritage and traditional wisdom.

#### **Recommendations and suggestions:**

- ◆ The assessment of the carrying capacity is required as part of discouraging over-tourism in the ecologically vulnerable areas.
- ◆ Environmentally friendly infrastructure should be given importance, and this would comprise of solar power, collection of rainwater and scientific garbage disposal systems.
- ◆ Introduction of community-based tourism governance models to assure equity in revenue distribution.

- ◆ MTDC and NGOs should be used to improve training and skill development programs to youth and women in the country.
- ◆ There should be the adoption of digital surveillance of forests and control of tourists.
- ◆ Publicity on lesser-known ecotourism sites to ease congestion in many sites.
- ◆ Strict compliance of environmental regulations of tourism construction proposals.
- ◆ Scientific management should have academic research partnership with universities.
- ◆ Tourist eco-education to decrease irresponsible behaviour.
- ◆ Developing community-based model of partnership between the public and the private sectors (PPCP) to achieve effective implementation of policy.

### Conclusion:

Eco tourism in Maharashtra has a huge potential of sustainable development through balancing environment conservation, economic development, and social empowerment. Although it has generated employment, empowered rural residents and conservation, issues like overtourism, environmental destruction, and poor infrastructure are still present. Long-term sustainability strongly relies on good governance, community participation, and a stringent environmental law. The Maharashtra Tourism Policy 2024 and the National Ecotourism Policy 2017 are powerful in the form of policies but need to be implemented efficiently. Enhancement of eco tourism will make Maharashtra a role model of sustainable development and conservation of the environment.

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## Analysis of Foreign Capital and Foreign Investment in India

**Dr. Naresh Kumar**

Associate Professor, Department of Economics  
Government P. G. College, Ambala Cantt.

### Abstract

*India made use of foreign investment after attaining independence in order to promote economic expansion and strengthen its balance of payments. It takes several forms, such as foreign investments, commercial borrowings and foreign aid. The level of total investment is increased and is complemented by FDI. It facilitates the efficient use of natural resources and enhances managerial and entrepreneurial skills. Market interest rates, which are higher than those for concessional loans classified as foreign aid are paid to foreign banks for commercial borrowings. From Rs. 897,744 crores in 2013–14 to Rs. 1,816,834 crores in 2022–23, the total amount of commercial borrowings has grown consistently, indicating a strong expansion in borrowing activity. India's foreign aid receipts have fluctuated significantly, peaking in 2020–21 with concessional loans. Over the years, FDI inflows have typically increased; the largest influx, of Rs. 396,955 crores, was reported in 2019–20. India's economic growth, industrialization, infrastructural development and general standard of living have all been greatly aided by foreign investment.*

**Key Words:** *Investment, Growth, Foreign Aid, Grants, Loans*

### Introduction

Foreign capital has significantly influenced India's economic development, beginning during the era of the East India Company. However, the British government's policies favored foreign capitalists while neglecting India's interests. After gaining independence, India utilized foreign capital to foster economic growth and improve its balance of payments.

Foreign capital refers to investments made by foreign governments, institutions, private individuals, or international organizations in another country. It encompasses various forms, including foreign aid, commercial borrowings, and foreign investments. Foreign aid can include grants and concessional loans. Investments are typically made in the form of foreign currency, machinery and technical

expertise. Foreign capital manifests in several ways, such as foreign

collaboration, loans in foreign currency, and direct foreign investments. While many foreign entities and governments provide grants, the key distinction is that loans should be paid back with interest, whereas grants don't require repayment.

### Need of Foreign Investment Foreign Capital in India

Foreign investment is not just a capital influx; it brings modern technology, managerial expertise, job opportunities and new markets for our products. It is vital, especially given the gap between our savings and investment needs, which can be bridged by foreign direct investment. Foreign investment is crucial for India's on the whole economic growth. Foreign Direct Investment (FDI) complements

domestic investment and raises the overall investment level. It improves managerial and entrepreneurial capabilities and enables the effective utilization of natural resources. FDI also supports the creation of risky, capital-intensive projects and drives advancements in technology. Additionally, it creates more job opportunities, fosters the development of basic industries and contributes to infrastructure development. Moreover, it helps mitigate foreign exchange shortages resulting from a deficit in the balance of payments.

Before Independence, the British government in India lacked a clear policy on foreign capital, favoring investments from British sources over those from other countries. Foreign capital significantly contributed to the development of railways, electricity, the jute industry tea and coffee plantations and coal and other mines in India. Following Independence, in 1948, the First Industrial Policy recognized the importance of foreign capital for the country's economic development. On April 6, 1949, Prime Minister Jawaharlal Nehru emphasized that India warmly welcomes economic assistance and technical cooperation from around the world, affirming that no discriminatory policies would be applied against foreign capital.

#### **New Foreign Investment Policy-1991**

The Foreign Investment Policy of 1991 was notably liberal, removing limits on foreign investment inflows. Previously, foreign equity participation was capped at 40 per cent, but it now allows for 100 per cent participation. While prior regulations required approval for all foreign investments and technology agreements, the new policy permits many investments under automatic approval. Additionally,

foreign capital is now accessible across all industries, not just capital goods and high-priority sectors, and significant incentives are offered to attract it.

The current stance welcomes foreign capital in both consumer and capital goods. FDI approvals are automatic, eliminating the need for prior government or RBI consent; investors only need to notify the RBI within 30 days of receiving investment. Previously reliant on foreign aid and commercial borrowing, India now welcomes various investment forms. The policy facilitates modern technology inflow by streamlining payment processes for foreign technical experts and testing indigenous techniques abroad. Indian companies can raise capital in international markets through instruments like GDRs, ADRs, and FCCBs. The government offers numerous incentives to draw foreign investment into projects of infrastructure like telecommunications, power and roads allowing 100% foreign involvement in joint ventures in these areas. The government grants automatic approval for FDI in select technologically advanced sectors, allowing 100 per cent foreign equity participation and enabling investors to repatriate their capital as desired. Under the new policy, FIIs can invest beyond the previous 24% cap with shareholder approval, provided they adhere to sectoral limits. By 2013, the number of registered FIIs in India had risen to 1,767. The government assures that foreign investments will be treated equally to domestic investments, with no discriminatory practices. Foreign investors can repatriate profits, dividends, interest, royalties, and fees, serving as a strong incentive for investment. The projects involving investments up to ₹5,000 crore require

clearance from the Foreign Investment Promotion Board (FIPB), which was eradicated in 2017. Now, approvals for such investments are handled by the relevant Ministry, while investments exceeding ₹5,000 crore need clearance from the Cabinet Committee on Economic Affairs. In summary, the new foreign investment policy is significantly more liberal and aims to encourage greater foreign investment in India.

**Objectives**

The primary objectives of this study are:

- (i) To examine foreign investment and foreign capital in India on a year-by-year basis.
- (ii) To appraise the necessity of investment and foreign capital in India.
- (iii) To offer recommendations for the effective utilization of investment and foreign capital in India.

**Research Methodology**

Data related to commercial borrowing, foreign aid and foreign investment has been collected from Economic Survey 2023-24, Ministry of Finance, Government of India, New Delhi and Aid Accounts and Audit Division, Department of Economic Affairs, Ministry of Finance, New Delhi. The data has been used for calculating Compound

Annual Growth Rates (CAGRs), growth index of value and percentage share for the period from 2013-14 to 2022-23.

**Analysis and Discussion**

Foreign capital in India encompasses various forms of investment, including foreign direct investment (FDI), commercial borrowings and foreign aid. Foreign investment in India has seen significant growth, particularly in sectors like technology and manufacturing. Commercial borrowings have also increased, reflecting the country's expanding economic landscape. Foreign aid has shifted towards development projects, focusing on infrastructure and sustainability. The various types of foreign capital in India are outlined below.

**Commercial Borrowings**

Commercial borrowings are obtained from foreign banks at market interest rates, which are higher than those for concessional loans categorized as foreign aid. In recent years, the amount of commercial borrowings has significantly increased, contributing largely to the deterioration of our country's debt situation. Trend in commercial borrowing is clear from the Table-1.

**Table - 1**

**India's Outstanding Commercial Borrowings during the Period 2013-14 to 20122-23**

Year	Commercial Banks Loans	Securitized Borrowings	Loans/Securitized Borrowings etc., with Multilateral/Bilateral Guarantee + IFC (W)	Total Commercial Borrowings
2013-14	582644	313416	1684	897744
2014-15	635246	490895	2360	1128501
2015-16	647567	549076	2400	1199043
2016-17	567286	545906	2323	1115515
2017-18	550820	759701	2234	1312755
2018-19	659541	767283	2074	1428898
2019-20	823472	828604	2120	1654196
2020-21	806167	786907	1998	1595072
2021-22	793757	916492	1793	1712042
2022-23	874073	941018	1743	1816834
<b>CAGR</b>	<b>4.715</b>	<b>11.071</b>	<b>-1.729</b>	<b>7.515</b>

Sources: Economic Survey 2023-24; (Value in Rs. Crore)

Table-1 outlines India's outstanding commercial borrowings during the period from 2013-14 to 2022-23, broken down into different categories: commercial bank loans, securitized borrowings, and loans with multilateral/bilateral guarantees. Total commercial borrowings have steadily increased from Rs. 897,744 crores in 2013-14 to Rs. 1,816,834 crores in 2022-23, reflecting robust growth in borrowing activities. The commercial banks loans grew consistently, peaking at Rs. 874,073 crores in 2022-23, with a Compound Annual Growth Rate (CAGR) of 4.715%. The securitized borrowings showed strong growth with a CAGR of 11.071%, indicating a rising reliance on this borrowing method, peaking at Rs. 941,018 crores. And, loans with guarantees declined slightly over the period, with a negative CAGR of -1.729%, suggesting reduced reliance on this type of financing. The highest total borrowing occurred in 2019-20, followed by a dip in the subsequent year, possibly due to economic

conditions during the pandemic, before gradually recovering. The overall trend indicates a growing trend in commercial borrowings, particularly through commercial banks and securitized means, while highlighting challenges in utilizing loans with guarantees effectively. This reflects the evolving landscape of India's financing strategies over the years.

**Foreign Aid**

India has received substantial foreign aid for development, which includes both loans and grants from abroad. Grants do not require repayment from the recipients, while the loan component consists of concessional loans provided by foreign governments and international organizations. Usually, foreign aid is given for definite uses only and receiving nation doesn't have the liberty to utilize it for other purpose. Data relating to foreign aid during the period 2013-14 to 2022-23 is clear from Table-2:

**Table - 2**  
**Amount of Foreign Aid Received by India during the Period 2013-14 to 20122-23**

(Value in Rs. Crore)

Year	Concessional Loans	%age Change of Concessional Loans	Grants	%age Change of Grants	Total
2013-14	54372.6	99.742	140.2	0.257	54512.8
2014-15	48135.5	99.751	119.7	0.248	48255.2
2015-16	64208	94.613	3655.2	5.386	67863.2
2016-17	62650.4	99.603	249.5	0.396	62899.9
2017-18	61212.6	96.028	2531.4	3.971	63744.0
2018-19	96062.3	98.374	1587.6	1.625	97649.9
2019-20	75276.9	99.486	388.2	0.513	75665.1
2020-21	152149.9	99.914	129.6	0.085	152279.5
2021-22	104177.2	97.473	2700.3	2.526	106877.5
2022-23	106632.6	99.382	662.7	0.617	107295.3

**Sources:** Aid Accounts and Audit Division, Department of Economic Affairs, Ministry of Finance, New Delhi

Table-2 shows the amount of foreign aid received by India during the period from 2013-14 to 2022-23, detailing concessional loans, grants, and total aid. Notably, concessional loans peaked in 2020-21, reaching over Rs. 152,000 crore, with a significant increase in percentage change, indicating a spike in financial assistance during that year. Grants fluctuated more modestly, with a high in 2015-16. Overall, total aid increased over the years, especially in 2020-21, reflecting an ultimate reliance on foreign support during that period. The percentage changes in both categories illustrate varying trends in aid distribution, with concessional loans generally maintaining higher values.

### Foreign Investment

In the 1991 Foreign Investment Policy, the government began promoting foreign investment to reduce reliance on foreign debt. This investment primarily comes in the form of equity capital, which does not carry a fixed interest burden. Foreign investment refers to the capital put forth by individuals, companies or governments in assets or businesses situated in a different country. Foreign investment is often seen as a way to stimulate economic growth, create jobs and foster innovation in the host country. Inflow of foreign investment during the period 2013-14 to 2022-23 is clear from Table-3:

**Table - 3**  
**Foreign Direct Investment Inflows in India during the Period 2013-14 to 2022-23**  
**(Value in Rs. Crore)**

Year	Foreign Direct Investment (FDI)	Growth Index of Value
2013-14	186830	100
2014-15	215893	115.555
2015-16	294258	136.298
2016-17	283292	96.273
2017-18	253977	89.652
2018-19	301932	118.881
2019-20	396955	131.471
2020-21	406765	102.471
2021-22	418763	102.949
2022-23	335015	80.001

**Sources:** Economic Survey 2023-24

Table-3 presents the Foreign Direct Investment (FDI) inflows into India during the period from 2013-14 to 2022-23, value expressed in Rs. crore. FDI inflows have generally improved over the study period, with the highest inflow recorded in 2019-20 at Rs. 396,955 crores. The growth index indicates how FDI inflows have changed relative to the base year (2013-14, indexed at 100). For instance, in 2015-16, FDI inflows increased significantly, resulting in a growth index of 136.298. After peaking in 2019-20, FDI inflows

decreased in 2020-21 and again in 2022-23, with a notable decline in the latter year (index at 80.001). This suggests potential challenges in attracting foreign investment in the most recent years. The period from 2013-14 to 2018-19 showed a general upward trend, whereas 2019-20 to 2022-23 exhibited more variability, particularly the drop in 2022-23, which could be attributed to economic factors or changing investment climates. Overall, the table illustrates a growing trend in FDI over most of the decade,

with a notable peak and subsequent decline in the most recent years, reflecting a complex investment landscape.

### **Economic Development and Foreign Capital in India**

Foreign capital has been instrumental in driving India's economic development, fostering industrialization, enhancing infrastructure and improving the quality of life. While it presents challenges, the positive contributions of foreign capital are crucial for India's ongoing development journey. Foreign capital has made significant contributions to the economic development of India across various dimensions.

Modern technology plays a vital part in the growth of the Indian economy; however, much of the technology currently available is outdated and inefficient. The introduction of modern technology can be facilitated through foreign capital and aid, which often comes with technical expertise and trade experience. This advancement in technology boosts productivity, addressing the economy's pressing issue of inadequate capital that hampers growth. Since savings do not increase at the same rate as income, foreign capital fills this gap, making its role significant in enhancing capital availability. India has faced disequilibrium in its balance of payments, with imports growing faster than exports, leading to foreign exchange shortages. Foreign capital has increased the availability of foreign exchange, significantly aiding in this area. Additionally, the lack of essential economic and social infrastructure—such as railways, roads, canals, and power resources—has been a challenge, which foreign capital has helped to address, positively impacting agricultural and industrial growth.

Despite India's abundant natural resources, including minerals and water, inadequate capital and technical know-how have hindered their proper exploitation. Foreign investment can facilitate this process. Domestic private entrepreneurs are often hesitant to invest in basic industries and high-risk ventures, but foreign direct investment serves as venture capital, bridging this gap. This has led to the development of basic industries and risky sectors such as iron and steel, coal, oil exploration and energy generation, with foreign capital absorbing much of the initial risk. The influx of foreign capital has also spurred job creation, with many industrial units established through foreign partnerships and multinational corporations setting up operations in India. Additionally, foreign capital has enabled large-scale imports of essential goods, enhancing overall availability and helping to stabilize prices, even amid rising demand. To further its industrialization efforts, India needs to import capital goods like machinery and equipment, which can be challenging due to foreign exchange shortages. Foreign capital alleviates this issue by facilitating access to these essential imports. Given that India's export value is lower than its imports, boosting exports is critical and foreign capital can significantly contribute to this goal. Many foreign companies are permitted to establish operations in India with the stipulation that they export a certain percentage of their production, underscoring foreign capital's role in promoting exports.

### **Shortcomings of Foreign Capital and Foreign Investment**

- The influx of foreign capital and investment increases a country's reliance on others for machines, raw materials, and technical expertise.

This dependency extends to the need for ongoing supplies of spare parts and technicians from those countries.

- Countries like India that receive foreign aid often must fulfill with the terms set by giver nations and institutions. This can restrict the receiver's capacity to apply independent monetary, fiscal, industrial and commercial policies.
- The availability of foreign capital can negatively impact the growth of domestic financial resources. Easy access to foreign loans can reduce the incentive to increase local savings, which was particularly low in the early planning stages.
- There is significant uncertainty associated with foreign capital and aid, as it can be withdrawn at any time. Consequently, foreign capital cannot be considered a permanent fixture in an economy, and its availability often diminishes during times of crisis when it is most needed.
- Domestic producers may struggle to compete with industries funded by foreign capital, leading to decreased profits and potential production shutdowns, adversely affecting their growth.
- External debt often poses a heavier burden than internal debt. Borrower countries must manage foreign exchange to meet their external debt obligations, and shortages can complicate repayment, including interest.
- Foreign technology, which comes with foreign capital, can hinder the advancement of Indian technology and research. Indian firms reliant on foreign partnerships must depend on external sources for technical know-how and future improvements,

stalling domestic technological growth.

- In India, foreign capital tends to flow into high-profit sectors, resulting in inadequate development of essential and foundational industries. This leads to an imbalanced industrial landscape.
- Foreign loans create a debt servicing obligation, requiring repayment of both principal and interest after the loan period. The rising burden of debt servicing negatively impacts India's long-term balance of payments.
- Foreign aid is categorized into tied aid and untied aid. Tied aid is restricted to specific projects and must be used to purchase goods from certain countries, limiting the recipient's autonomy and often resulting in higher costs. In contrast, untied aid allows the borrowing country more discretion in its use. However, most foreign aid is not utilized freely.

### Recommendations

- Foreign capital should be directed toward productive initiatives that promote rapid economic growth. The income generated from these projects can be used to repay loans, making the foreign capital self-liquidating and less burdensome over time.
- India should seek more aid from international organizations like the International Monetary Fund, International Development Association and World Bank, rather than relying heavily on commercial loans. These institutions can provide untied, generous aid with minimal political pressure.
- Investment in export-oriented industries should be encouraged to

enhance foreign capital flow. Such investments would alleviate the burden of foreign capital while increasing the country's foreign exchange availability.

- Foreign loan agreements should ideally be long-term to reduce uncertainty and facilitate better planning for economic development. This approach would support investments in key long-term projects such as dams, irrigation systems, ports, and airports.
- For optimal use of foreign aid, it should be untied, allowing India to utilize it as needed. This flexibility enables the country to maximize the benefits derived from foreign capital.
- India should prioritize inviting foreign capital in the form of equity rather than loans. Equity investments carry enterprise risk without the fixed interest obligations associated with debt, making them a more favorable option.
- Efforts should focus on decreasing the burden of debt servicing. Encouraging concessional loans and seeking debt relief from international organizations can help manage this issue. Additionally, prioritizing the repayment of existing debts is essential.

In brief, while domestic investment is crucial for economic needs, foreign investment is also on the rise. Every effort should be made to encourage foreign investment, accompanied by necessary safeguards against potential negative impacts. To enhance the effectiveness of foreign capital and investment in driving India's economic growth, a balanced approach that incorporates both domestic and foreign investment strategies is essential. Implementing these recommendations can help safeguard

against potential drawbacks while maximizing the benefits of foreign capital influx.

### Conclusion

Thus, it can be concluded that the analysis underscores the pivotal contribution of foreign capital in economic development of India, highlighting its dual nature as both a catalyst for growth and a source of dependency. Foreign investment has not only provided essential capital and technological advancements but has also fostered job creation and infrastructure development. However, challenges such as over-reliance on external resources, potential negative impacts on domestic industries, and the burdens of debt servicing must be carefully managed. India's outstanding commercial borrowings show a steady increase, particularly in securitized borrowings, which have grown significantly. The reliance on traditional commercial bank loans remains strong, but the decline in loans with multilateral/bilateral guarantees suggests a shift in financing strategies. Overall, this indicates a growing capacity to leverage diverse borrowing sources. FDI inflows generally increased over the years, peaking in 2019-20. However, there is a noticeable decline in 2022-23, indicating challenges in maintaining foreign investor confidence and possibly reflecting broader economic uncertainties. This highlights the need for India to enhance its investment climate to attract and retain FDI. Foreign aid received by India has shown significant fluctuations, with a peak in concessional loans during 2020-21. This suggests a moment of increased reliance on external financial support, possibly due to domestic economic challenges. Grants have remained more stable but exhibit variations that reflect

changing priorities in international assistance.

To maximize the benefits of foreign capital while mitigating risks, India should adopt a balanced strategy that emphasizes productive investments, prioritizes equity over debt and encourages export-oriented industries. Seeking aid from international organizations can offer more flexible financial solutions. By addressing these challenges and implementing strategic recommendations, India can harness foreign capital effectively, driving sustainable economic growth while safeguarding its autonomy and fostering domestic innovation. This balanced approach will be essential for navigating the complexities of a globalized economy and ensuring long-term development.

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## Navigating Growth and Sustainability: Strategy Mapping Across the Life Cycle of a Fishermen's Cooperative

**Sarvesha Dhaimodkar**

Research Scholar

SSA Government College of Arts &  
Commerce Pernem, -- GBS,  
Goa University, Goa. India.

**Sitaram. V. Sukthankar**

Associate Professor,

Post graduate Department of Commerce,  
Govt. College of Arts, Science and  
Commerce. Khandola, Goa. India.

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### Abstract

*This study maps strategies adopted by a fishermen's marketing cooperative to sustain and grow across its life cycle stages. It employs an exploratory case study aligned with Cook and Burrell's (2009) lifecycle framework, using in-depth interviews, documents, observations, and informal discussions as data sources. Findings show that each phase presents distinct challenges that can be addressed through timely, stage-appropriate strategic choices. The study highlights the importance of a robust financial foundation and complementary activities, such as retailing and banking, providing a practical framework for cooperative leaders—especially in developing countries to prevent stagnation and foster long-term success.*

**Keywords:** *Cooperative lifecycle, Marketing Cooperative Society, Strategy mapping, Cook and Burrell lifecycle framework*

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### Introduction and Background of the Study

Fishermen who work alone are vulnerable to exploitation due to low income, limited education, weak bargaining power, and inadequate capital for infrastructure (Ayoob & Fowsar, 2020; Jentoft & Finstad, 2018; Schwabe et al., 2021). Organising and bargaining collectively through cooperatives has therefore become a vital organisational form for fishermen (Jentoft & Finstad, 2018; Coglán & Pascoe, 2015; Chai P. et al., 2021; Hueth & Reynolds, 2011).

Despite fish being a leading export commodity in many developing countries, fishing communities often remain poor, partly due to weak linkages between small-scale fishers

and markets (Alemu & Azadi, 2018). Those who depend on middle agents for marketing their catch and obtaining finance often become permanent debtors to these intermediaries (Schwabe et al., 2021; Solomon, 2023).

Cooperation can address unemployment and poverty while supporting more sustainable economic activities and fairer income distribution (Samian M. et al., 2017). A cooperative is essentially a collective of individuals who collaborate under democratic principles to serve the needs of members and the community, reduce dependence on intermediaries, build awareness, and encourage saving (Ramkishan, 2004; Solomon, 2023). As such, cooperatives are widely recognised as an effective organisational model for combating poverty (Child A., 2018).

Through collective action, farmers and fishers can improve overall market performance and redistribute economic surplus from input-supply and intermediation sectors back to producers (Hueth & Reynolds, 2011). However, the long-term sustainability of fisheries cooperatives depends on their capacity to adapt to changing conditions and emerging challenges, despite cooperative principles having proven applicable and successful across countries (Jentoft & Finstad, 2018).

### Literature review

Organisations must continually adjust structures and practices to meet societal and member needs, making strategy a central factor in achieving goals and performance (Trigkas et al., 2020; Liu, P., & Wu, J., 2023). Early strategic choices at the founding stage, such as prioritising mission-based or member-interest-based activities, shape later strategic trajectories, whose effectiveness depends on contextual variables and competitive practices (Zhou Z. et al., 2023; Bauwens et al., 2020; Shapiro-Garza et al., 2020; Kinyuira, 2014). Diversification, knowledge sharing, strong interpersonal relationships, and strategic alliances can strengthen resilience and competitive advantage in volatile, globalised markets (Snorek et al., 2023; Galati et al., 2019). In cooperatives, strategic management entails acting in members' best interests, with policies, strategy, internal organisation, and participatory, integrated planning jointly determining performance and enabling effective alignment of strategy, structure, process, and environment (Bijman & Iliopoulos, 2014; Salavou, 2015; Wilbon, 2012; Walker, 2013). Thus, cooperatives must identify and adapt strategies

across their life cycle stages to sustain efficiency and member benefits.

Life cycle assessment is widely regarded as a decision-support tool that helps set targets, monitor performance, identify opportunities for improvement, manage environmental impacts, and provide transparent information to stakeholders (Pryshlakivsky et al., 2021; Fritsch et al., 2022; Moutik et al., 2023). Organisational life cycle practices, however, need to be understood in relation to ongoing discussions, negotiations, and reconfigurations rather than in isolation (Nilsson-Lindén et al., 2021). In cooperatives, social capital is a key success factor that tends to be high in early stages and decline as size and complexity grow, requiring strategies that rebalance social and economic attributes at maturity (Deng et al., 2020). Life cycle-based frameworks link stages to different emphases in social responsibility, from basic compliance at establishment to broader internal and external responsibilities at maturity and redevelopment, while degeneration studies highlight erosion of participation and increasing heterogeneity in member preferences over time (Jin Tang et al., 2020; Bretos et al., 2019). Although product and organisational life cycle assessments are well established for decision-making, there remains limited research specifically on cooperative life cycles and their strategic life cycle management.

### Cook's LCF

Cook and Burrell (2009), with revisions by Cook (2018), introduced the cooperative life cycle framework (LCF) comprising five phases. Phase 1 (Justification) sees patron-owned cooperatives form in response to market failures or unmet member

needs. Phase 2 (Organisational Design) establishes legal, capital, and governance structures. Phase 3 (Growth, Glory, Heterogeneity) marks the peak development, characterised by growth, complexity, diverse member interests, and internal strife. Phase 4 (Recognition and Introspection)

involves poor governance, strategic drift, and deviation from the mission. Phase 5 (Choice) requires decisions on reinvention, spin-offs, or market exit, emphasising active governance and renewal to align with dynamic markets (see Figure 1).

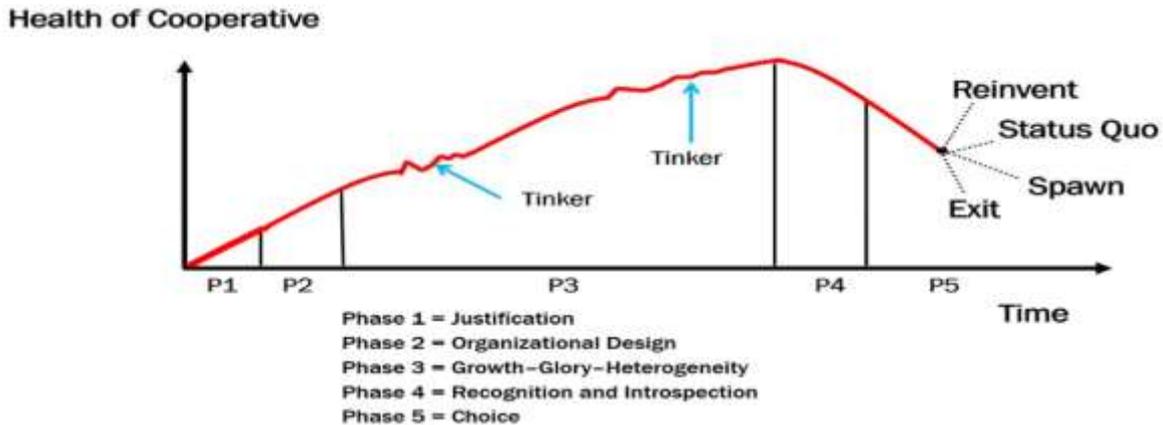


Figure 1: LCF of a Cooperative organisation

Source: Cook, M.L. (2018). A life cycle explanation of cooperative longevity. *Sustainability*. (Reprinted with permission)

**Research methodology**

The study employed a qualitative case study design to map the strategies used by the Mandovi Fishermen’s Marketing Cooperative Society Ltd. (MFMCSL) to sustain and develop across its various life cycle stages. MFMCSL, a leading fisheries marketing cooperative in Goa with nearly four decades of operation and several state and national recognitions, was purposively selected as the case. Data were collected through in-depth interviews with directors, documentary evidence, observations at the jetty, and informal discussions with the fishermen members.

A literature review on strategic management and organisational life cycles informed the development of an unstructured interview guide, sensitising the researchers to key concepts. Semi-structured interviews were conducted in a relaxed setting to encourage open discussion, audio-

recorded, and transcribed verbatim. The transcripts were then returned to participants for confirmation. Drawing on Cook’s (2018) life cycle theory, the researchers then interpreted the data to delineate MFMCSL’s life cycle stages and identify the strategies associated with each stage.

**About the Study Area: Goa**

Goa, located on India's west coast, borders the Arabian Sea, Maharashtra, and Karnataka, and derives significant economic growth from fishing, as well as agriculture, tourism, and pharmaceuticals (IBEF, June 2023). The fisheries sector contributes 2.5% to state GDP and 17% to agricultural GDP, with 5–10% of the population engaged in fishing and allied activities like marketing, processing, and vending; it accounts for nearly 2% of India's marine fish production (Department of Fisheries, 2022;

Sreekanth & Mujawar, 2021). Despite growth potential as a "sunrise sector" and statements positioning Goa as a national fisheries hub (Giriraj Singh, 2021), challenges persist, including overexploitation, pollution, climate change, and weak management frameworks (Sreekanth & Mujawar, 2021).

Among the five main jetties (Mallim, Talpona, Cutbona, Chapora, and Vasco), Mallim is the oldest and largest, with the highest average fish catch, where most activities are conducted through MFMCSL (Department of Fisheries, 2022).

**Discussion on the Case**

**Overview of MFMCSL**

The MFMCSL, although formed in 1984, was registered under the Cooperative Societies Act in 1987 by fishermen who owned mechanised shipping vessels to provide a conducive environment for the marketing of the members' fish catch and promote the economic and social welfare of the members.

This cooperative was awarded the Best Cooperative Society Award in 2004 by the National Cooperative Development Corporation (NCDC) in

India. The Goa Government recognised it as the best society for its outstanding work. The society is known for prioritising member satisfaction and providing diverse facilities. Although it started with only 13 members, the cooperative currently has 149 members who own 189 Trawlers and employs 42 regular staff members.

For the benefit of its members, the cooperative society offers a variety of amenities on the Jetty, including ration stores, diesel pump stations, ice plants, a nut and bolt shop, and a spare parts shop, as well as repair workshops, a net mending workshop, a canteen, and a freshwater supply.

**Determination of Life Cycle Stages of MFMCSL**

MFMCSL began with high member unity but later faced challenges aligning organisational and individual interests, prompting adaptive strategies for long-term survival. Life cycle stages were identified using sales turnover trends as a key indicator of financial health and performance, given cooperatives' need to balance sustainability with member benefits over profit maximisation or charity (Al Hayak, 2018).

**Table 2: Turnover per annum of the cooperative society (₹ lakhs)**

Years	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Turnover	0.79	0.77	0.7	1.49	4.72	4.82	4.42	4.06
Years	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-200	2000-01
Turnover	9.19	85.51	424.43	564.43	834.72	755.87	925	1155.6
Years	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Turnover	1068.3	1570	2010.2	1902.9	2429.9	2634.3	2595.1	2994.9
Years	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Turnover	3218.4	3480.3	3854	3937.6	4618	4901.3	4318.6	4600.6
Years	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	-
Turnover	4618.2	4353.1	4014.4	3522.1	4670.6	4741.9	4367.6	-

(source: Audited reports of MFMCL)



**Graph 2: Life cycle stages of MFMCCL based on its Turnover p.a.**

MFMCCL's life cycle phases (Phases 1–5) were mapped to turnover trends (Graph

2) and key strategies adopted for sustained performance, as summarised in Table 3 below.

**Table 3: Mapping of Life Cycle Stages and Strategies (Cook & Burress, 2009)**

Phase (Years)	Cook's Description	MFMCCL Symptoms & Strategies
Phase 1: Justification (1984–1986)	High member idealism, direct democracy, and assembly decisions	- High loyalty, unity, trust in leadership - Collective bargaining to market catch and avoid middleman exploitation
Phase 2: Organisational Design (1986–2002)	Formal structures adopted; idealism continues, management power grows, and conflicts emerge	- Member conflicts, adjustment issues - Umbrella strategy (member marketing freedom under co-op); new bylaws, structure - New revenue-generating units established
Phase 3: Growth-Glory-Heterogeneity (2002–2015)	Degeneration symptoms: market values accepted, democracy diluted, board control dominant	- Rising conflicts; acceptance of market values and structure changes - Peak diversification, new income avenues; growth/glory phase - Belief: co-op growth benefits members
Phase 4: Recognition-Introspection (2015–2021)	Economic logic dominates; managers assume full control	- Leadership dominance, democracy eroded - Market values > participation; co-op principles lost - Recognition of degeneration; choice needed (continue/exit/convert)

Source: Elaborated from Cook (2018)

**Phase 1 - Justification (1984-1986):**

According to Cook and Burress's LCF, cooperation among members is paramount at this stage, with a mission grounded in commitment and idealism. In the initial phase of its life cycle, MFMCSL exhibited strong unity and a shared commitment to a common cause. The primary challenge for members was marketing their catch, as it was often exploited by intermediaries. In response, the cooperative initially acted as a commission agent, selling all members' catch collectively through an auction system. This collective bargaining strategy secured reasonable prices for fish, leaving little scope for exploitation or manipulation.

**Phase 2: Organisational Design (1986-2002)**

This phase consolidates cooperative principles with member economic benefits amid emerging hurdles. After initial collective bargaining proved ineffective, MFMCSL adopted a hybrid strategy, allowing one-third of its members to sell fish individually, while the others continued to sell collectively. However, conflicts persisted, leading to the full implementation of individual marketing freedom. To ensure survival without revenue from bargaining, the cooperative pursued diversification. A repair shop opened in 1986 for vessel maintenance, and in 1995, partnerships with Bharat Petroleum and Indian Oil. A diesel pump and storage tank, providing discounted fuel and easing members' financial burdens. These changes reshaped organisational structure, bylaws, and policies, generating revenue while benefiting members.

**Phase-3-Growth-Glory Heterogeneity (2002-2015):** According to LCF, the organisation understands the need to suppress its cooperative principles and

focus on survival, wherein members allow the penetration of market values as signs of degeneration become apparent and are willing to compromise their ideals of cooperation.

At this stage, the MFMCSL decided to focus on expansion to grow and survive economically, as the signs of degeneration were becoming apparent. The Cooperative was surviving only on the sale of Diesel, and the members' retention was becoming important. More and more units were added to provide economic benefits to members, in addition to cooperative survival. This led to the suppression of cooperative principles and market penetration as a means of survival. The society established additional units, including an ice plant, grocery store, lathe workshop, nut and bolt stores, net mending shed, and canteen, as part of an extension and diversification strategy. The members were given these facilities at discounted rates and, to some extent, on credit. Other avenues, such as charging rent for offices, parking fees, rent for fish-selling boxes, and wharfage for using the jetty, were explored and utilised. At the same time, to retain the existing members, multiple member-centric financial schemes were introduced. The following section provides a brief description of these strategies.

***Strategies for Growth and Survival***

- a) Workshops for boat maintenance and the provision of nuts and bolts (2002)
- b) Provision of fresh water to the crew (2003) by collaborating with water supply contractors, thus easing the financial burden of procuring it.
- c) Offer grocery items at discounted prices (2004).

- d) A Canteen (2004) was established to provide food at concessional rates for the crew when they dock on the Jetty.
- e) Setting up of ice plant (2004 and 2006) has helped to decrease the cost of purchasing ice from the market.
- f) Lathe workshop (2005) was started on a jetty that reduced the costs of the boatmen and saved time.
- g) Net Mending Shed (2005 and 2012) intended to attain revenues while benefiting members.

### **Financial Strategies**

- a) Providing Credit Facility to the boatmen on all the stores maintained by the cooperative, including the diesel pump up to the limit of Rs. 10000/- on every shop
- b) Loan provision at a nominal rate nearly equivalent to the interest rate on a bank savings account.
- c) Compensation for the family of the dead crew member in case of his accidental death.

### **Operational Strategies**

Several strategies, including complete operational freedom for boat owners, offered the option to sell directly to exporting agencies, intermediaries, or local vendors. Directors ran units, enforced jetty discipline, and managed canteen/office work internally to ensure efficiency, thereby reducing salary costs to professional managers.

**Phase-4 - Recognition and Introspection (2015-2021):** In the fourth stage of the life cycle, management plays a dominant role, focusing primarily on economic growth. In this phase, the members' power is

subdued, and decision-making is centrally concentrated.

By 2015, MFMCSL ran nine jetty units, charged non-members for entry/loading/parking, collected auction fees, held bank deposits, and earned from rents/scrap—yet peaked in turnover while declining in participation, loyalty, trust, and procedural consent amid a "survival of the fittest" culture. The Cooperative has reached its highest peak in terms of turnover, but has lost in member participation, support, loyalty, and trust and was showing a declining trend in the total 'Turnover' of the cooperative.

### **Stage 5: Choice (2021 onwards):**

This is a stage where, according to LCF, the Cooperative must make a choice and decide on its future course of action, as the Cooperative principles are becoming less visible and economic survival is becoming the dominant factor. MFMCSL must choose between fading principles and dominant economic survival. It peaked in turnover (2015) but declined post-COVID, even dropping diesel discounts for market rates despite member needs. Facing stagnation, it must decide whether to exit, convert to an investor-based model, maintain the status quo, or regenerate through cooperative renewal.

MFMCSL must decide whether to accept its current state and remain stagnant or develop new strategies, recognise its social value, and plan for its future. If no action is taken, there is a possibility that the cooperative may have to exit the industry.

### **Concluding Remarks**

Despite challenges, MFMCSL survived as a fisheries marketing cooperative through adaptive strategies across its life cycle (Table 3). High

member loyalty, commitment, and trust strengthen cooperatives through pooled resources (Deng et al., 2020), enabling members to benefit from and execute board-planned strategies (Talonen et al., 2021). Collective efforts combat poverty and foster development (Moon & Lee, 2020), though organisations often lack clear situational knowledge for solutions (Mintzberg, 1973; Mintzberg et al., 1976). MFMCSL innovated by competing, modifying tactics, and linking internal/external environments for varied outcomes. Growth strategies succeeded in the short term, but sustained success requires identifying critical factors for productivity, participation, and competitive advantage (Muneeb et al., 2023). Ultimately, member unity and involvement distinguish successful cooperatives, which in turn determine MFMCSL's sustainable development.

### Theoretical Contribution

Cooperative literature lacks research on life cycle frameworks, despite cooperatives' teamwork spirit and the need for longevity, especially in strategy mapping, particularly in developing countries. Fisheries cooperatives face professional gaps, conflicts, trust issues, and financial illiteracy, issues that are more acute in Asia. This study uniquely maps a fishermen's cooperative strategies across life cycle stages, expanding the literature

### Managerial Implications and Future Research

A strong financial base, supported by supplementary activities like retailing and banking, is essential for cooperative success, particularly in developing countries. The life cycle framework guides leaders in timing strategies across stages to avoid stagnation and exit. This study offers

insights for identifying and developing adaptive strategies in fisheries cooperatives. Future research should apply the framework to multiple cooperatives to enhance generalizability and utilise quantitative methods, such as time-series analysis, to validate the findings.

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## Impact of Economic Reforms on Indian Agriculture with Special Reference to WTO Agreements

**Sandeep Kaur**

Assistant Professor, PCM S.D. College for Women Jalandhar,  
Punjab Email: [sandeepsukh.sk@gmail.com](mailto:sandeepsukh.sk@gmail.com)

### Abstract

*It was presumed that the new economic reforms adopted in 1991 would benefit tradable agriculture and also by improving the terms of trade in its favour. But it was ironic that trade liberalisation and macroeconomic policy framework had not been able to bring any significant growth in the agriculture sector. Although WTO brings new opportunities and challenges for the member countries through trade liberalisation in the agriculture sector, in the case of India, it had created more challenges for the farmers than opportunities. The present study aims to address 'how WTO agreements have adversely impacted Indian agriculture'. The study endeavours to quantify the variables related to globalization. A composite index of agrarian crisis has been created to check the impact of different implications of WTO agreements on agrarian crisis. Results of regression analysis found, that domestic to international prices ratio and total subsidies have a significant impact on Indian agriculture. No study has constructed an index of agrarian crisis and used it as the dependent variable in regression analysis which has been done in the present study.*

**Keywords;** Composite Index, Principal Component Analysis, Profitability, Productivity, competitiveness, tariff rate, domestic support.

### 1. Introduction

The economic strategy that has been implemented since 1991 is known as a new economic strategy or economic reforms. Liberalisation, privatisation, and globalisation were the primary concerns of these economic changes, and the key to reforms was increased efficiency, improved productivity, adoption of contemporary technology, flexibility, and better capacity utilisation. The main goal of economic reforms was to give the private sector a bigger role. To reduce needless barriers to obtaining licences, adjusting output to managed prices, and denying MRTP enterprises industrial licencing, the government launched a variety of steps as part of its new economic strategy. However, real performance had been

poor since the middle of the 1990s. The 1991 neo-liberal policies had a negative impact on the cultivators' way of life, the majority of whom were small and marginal farmers and agricultural labourers. The majority of the population was impacted by a slowdown in the growth rate of the agricultural sector (Das, 2012).

The different policies adopted in neo-liberalization phase were the decline in public investment, cutbacks in input subsidies, declining incentive pricing, contraction of institutional credit in rural areas, and shrinking public extension services. But all these had precipitated a widespread agrarian crisis in India, which resulted in a fall in farm incomes and the problem of indebtedness in agriculture. Thus, the

liberalization of agricultural trade and export-oriented agriculture forced farmers to shift to the cultivation of commercial crops but the average returns from the investment undertaken for the cultivation of these crops were very low due to the increasing volatility of crop prices. Other than this, squeezing farm incomes, and increasing dependence on moneylenders for credit requirements resulted in a high-stress situation and the distressing phenomenon of farmer suicides in India (Banerjee, 2011).

Vyas (2001) and Bhalla (2004) stated that the competitiveness of Indian agriculture had been adversely affected since the WTO regime. The developed countries continued to protect their agriculture sector by providing heavy export subsidies and domestic support to their agricultural products. The result was a significant decline in global pricing, making Indian agricultural products uncompetitive on the global market. Shiva (2003) also looked at how the corporate world controls Indian agriculture, making it impossible for small and marginal farmers to compete with their inputs. Through Market Access, developing nations are forced to forgo even quantitative restrictions, which are designed to shield local farmers against heavily subsidised food imports, thanks to market access. As a result, farmers in developing countries experience significant losses. In their 2009 study, Bhalla and Singh analysed the expansion of India's agricultural sector throughout the pre-liberalization (1980-83 to 1990-93) and post-liberalization (1990-93 to 2003-06) eras. In the years following liberalisation, India's economy showed a noticeable slowdown in growth of yield and output in different areas.

India is facing several challenges under the WTO regime related to food security, product-specific support, non-tariff measures, export subsidies and erosion of policy space to protect farmers interested in certain agricultural products. The likely adverse impact of WTO on the Indian agriculture sector may be in terms of curtailing the flexibility to impose export restrictions, domestic support under Article 6.2, crop insurance scheme under Green Box and poultry sector etc. (Sharma, 2016).

### 1.1 Objectives

In light of the above, the main objectives of the present paper are:

1. To study the impact of new economic reforms on Indian agriculture.
2. To analyse the extent of the agrarian crisis in India due to different WTO agreements such as cutbacks in input subsidies, tariff reduction commitments, declining exports and competitiveness in the international market etc.

### 1.2 Research Gap

The review of the literature shows that most of the studies are related to agrarian crisis i.e. declaration in agricultural growth, farmers' distress, and implications of economic reforms on agricultural sector etc. Only a few studies are about the impact of different factors on Indian farming after economic reforms. The study is an attempt to enlighten the different implications of WTO agreements which gravely affected Indian agriculture.

## 2. Materials and Methods

### 2.1 Data Collection

The secondary data have been used to analyse the agrarian crisis in India. The data has been collected mainly from sources such as the Ministry of Agriculture, Planning Commission, CACP Reports of the Directorate of Economics

and Statistics, WTO reports, Handbook of Statistics, Reserve Bank of India, Ministry of Finance, Ministry of Agriculture and Farmers Welfare, CMIE reports, NSSO reports etc. the time frame of the study has been taken from 1996-97 to 2013-14. It was due to the onset of deceleration in the agricultural sector that began in the early 90s but it becomes sharp in the late nineties (Dhas, 2009). All the monetary data has been deflated using the GNP deflator to express at constant prices 2011-12.

## 2.2 Analytical Approach

### a) Principal Component Analysis

The composite index of Agrarian Crisis has been constructed by employing Principal Component Analysis. It is a variable reduction method, which helps in summarizing a large number of interrelated variables into a smaller number of uncorrelated composite variables. Therefore, when there is some redundancy in the variables, then this method is used, where redundancy means correlation among the variables. In the present study, this method is employed to construct one composite variable from three correlated variables.

### b) Multiple Linear Regression analysis

The index, constructed with the help of principal component analysis, has been used as the dependent variable. The independent variables have been chosen according to the objective of the study and data availability. The constructed model is shown below:

$$\ln \text{ACI} = a + b_{11} \ln \text{INPSUB} + b_{12} \ln \text{DIPR} + b_{13} \ln \text{EXIM} + b_{14} \ln \text{FDI} + b_{15} \ln \text{TRF} + U_t$$

Here,

$\ln \text{ACI}$  = Agrarian Crisis Index

$\ln \text{INPSUB}$  = Total Input Subsidies

$\ln \text{DIPR}$  = Domestic to International Prices Ratio

$\ln \text{EXIM}$  = Exports to Import Ratio

$\ln \text{FDI}$  = Share of FDI in Agriculture

$\ln \text{TRF}$  = Average Agricultural Tariff Rate

$a$  = Constant

$b_{11}, b_{12}, b_{13}, b_{14}, b_{15}$  = Regression Coefficients

$U_t$  = Error term

## 3. Results and Discussions

### 3.1 Economic Reforms and Indian Agriculture

The introduction of economic reforms in 1991 brought several major changes in the economy, which had a direct bearing on the agricultural sector. Although the adjustment policies did not make any direct reference to the agriculture sector, it was argued that the other changes involving stabilisation and structural adjustment programme would have a significant impact on the agricultural sector of the economy. Tradeable agriculture would profit from the many reforms, such as the exchange and trade policies, currency depreciation, elimination of the industrial licencing policy, and decrease in industrial protection, by improving the terms of trade. But it was ironic that trade liberalisation and macroeconomic policy framework had not been able to bring any significant growth in the agriculture sector (Bhalla and Singh, 2009).

But the removal of industrial protection and the ensuing depreciation in the exchange rate had pushed relative pricing in the direction of agriculture and benefitted agricultural exports. The index of agricultural prices in relation to manufactured goods increased by 30 per cent in the 1990s. Additionally, compared to the ten years prior to the reform, agricultural exports climbed from 1.1 per cent in 1990 to 1.9 per cent in 1999 in the world's exports of various commodities. Even while trade policy

reforms had benefited Indian agriculture, it had also suffered in other ways, most notably from a drop in state investment in crucial sectors like irrigation and drainage, soil conservation and water management systems, and rural roads (Ahluwalia, 2002). The reduction in fertilizer subsidies increased the input cost. It was also expected that there would be improved availability of imported materials and products with tariff reduction and import liberalisation.

### 3.2 *WTO and Indian Agriculture*

The WTO started functioning on January 1, 1995, with the acceptance of the Dunkel proposal. Along with old ones, WTO dealt with several new issues. The various issues were covered by the WTO at the time: tariff and non-tariff barriers, agriculture, textiles and clothing, trade-related aspects of intellectual property rights (TRIPs), trade-related investment measures (TRIMs), the General Agreement on Trade in Services (GATS), anti-dumping measures, pre-shipment inspection, state trading, import licencing, Government procurement procedures, technical trade barriers, customs union and free trade area, subsidies, and countervailing measures, the balance of payment problems and a lot of others.

Thus, under the auspices of WTO, the member countries signed several trade-related agreements. And the first-ever reform and removal of trade barriers in the agriculture sector were accomplished by the Agreement on Agriculture (AoA) (Deodhar, 1999). Establishing a fair and market-based agricultural trade system was the major goal of the AoA. Starting on January 1, 1995, the date the agreement went into effect, the implementation period of the agreement was six years for developed nations and nine years for

developing countries. The built-in feature of AoA that allows for its own evaluation and renewal led to the extension of these dates.

Several studies suggest that Indian agriculture is internationally competitive and possesses strong export potential. It was expected that greater market access in developed countries—through reduced tariffs, removal of non-tariff barriers, elimination of export subsidies, and lower domestic support—would significantly boost India's agricultural exports. During 1987–88 to 1993–94, domestic prices of wheat, rice, and cotton in India were below world prices, indicating the likelihood of higher farm incomes following trade liberalisation (Gulati & Sharma, 1994). Similarly, Debroy (1996) noted that India could gain additional competitiveness under the WTO regime. Studies by Bhalla and Singh (1996) showed that Punjab could profitably export rice and cotton, while Anderson and Valenzuela (2006) argued that agricultural liberalisation after the Doha Round would generate real income gains for developing countries. WTO affected Indian agriculture in both positive and negative ways. It had made agricultural trade possible in the fields of floriculture, horticulture, dairy, etc. However, the WTO system has also brought about issues like biopiracy, loss of biodiversity, ecological imbalance, and food and seed instability. All these aggravated the problems of poverty, unemployment, low prices of produce and low agricultural incomes etc.

Although WTO brings new opportunities and challenges for the member countries through trade liberalisation in agriculture sector, in the case of India, it had created more challenges for the farmers than opportunities. It is a well-known fact

that the gains from trade liberalisation depend upon the competitiveness of the agriculture sector, and the export competitiveness depends upon the export subsidies given to the sector and the trends in international prices. The performance of Indian agriculture exports had not been satisfactory due to internal and external factors since 1995. The developed countries continued to protect their agriculture sector. International prices were lowered as a result of the developed countries' substantial export subsidies and domestic support. Thus, the competitiveness of Indian agriculture had been adversely affected.

**3.3 Impact of Economic Reforms on Agrarian Crisis**

The Indian economy underwent a significant transformation as a result of this policy and WTO regulations. The Export-Import policy was liberalised, and numerous items had their import and customs duties significantly reduced or completely eliminated so they could be imported without restrictions. Investments made by the government in the industrial and agricultural sectors started to decrease. The restructuring of the PDS really affected the availability of food grains to the poor at subsidised rates. All of these actions had effects on the farming sector. (Mallika, 2012).

*Construction of Composite Index of Agrarian Crisis: Principal Component Analysis*

Agrarian crisis is a complex situation. Since we want to analyse the impact of various implications of economic reforms on the agrarian crisis, we try to quantify the agrarian crisis and construct a composite index of agrarian crisis. To quantify the agrarian crisis, we have considered three variables i.e. firstly, profitability; as

agriculture has become highly unprofitable, secondly productivity; the productivity of the agricultural sector has also been declining due to rising costs, crop failures etc., thirdly, terms of trade between agriculture and non-agricultural sector; as it has become unfavourable for agricultural sector. Table-1 is an explanation of the indicators taken under analysis.

**Table 1 : Indicators Selected for Constructing Index of Agrarian Crisis**

Indicators	Variables
Profitability	Profitability=Value of main output – Cost of cultivation(C <sub>2</sub> )
Productivity	Yield of total food grains
Terms of Trade between Agricultural and Non-Agricultural Sector	(Index of prices received/Index of prices paid) *100

**(i) Profitability**

Indian agriculture is becoming unremunerative and economically unviable because the profitability of agriculture is low or negative. The farm incomes are not sufficient enough for the farmers to meet their various consumption as well as farming expenditures (Dhas, 2009). Tripathi (2013) also examined the trends in farm profitability of wheat and paddy by using the data in CACP reports on C<sub>2</sub> and A<sub>2</sub> and the gross value of output. The study concluded that during the reform period, the average real paid-out cost of cultivation of these crops had increased in absolute terms as compared to the 1980s and the net farm profitability of rice had declined by 10 per cent in real terms during the post reforms period (1994-95 to 2004-05). The Study mentioned the various reasons behind the slowdown in growth rates of the value of production of major crops on the basis of other studies i.e. technology

fatigue, declined public spending in irrigation and water management, biased economic reforms etc.

**(ii) Productivity**

“India’s membership and commitment to World Trade Organization (WTO) in 1995 was a clear sign of India’s intention to take advantage of globalization and face the challenge of accelerating its economic growth. One measure of economic growth is given by productivity growth as it forms the basis for improvements in real incomes and welfare. The concept of productivity growth gained importance for sustaining output growth over the long run as input growth alone is insufficient to generate output growth because of diminishing returns to input use” (Mahadevan, 2003). Nevertheless, Indian agricultural productivity is quite low due to several factors i.e. heavy burden of population, traditional methods of farming, small holdings, natural calamities, lack of good quality seeds and manure etc.

**(iii) Terms of Trade**

“The concept of terms of trade between agriculture and non-agriculture, representing the relative prices, was added as one of the factors for consideration while fixing the minimum support prices by the Government of India since 1980”. Mitra (1977) and Dantwala (1987) examined the fall in the relative demand for manufacturing goods and the favourable

terms of trade in the agricultural sector during the period 1965-1976. But after the economic reforms, imports of food grains and lower domestic prices converted it into unfavourable. The terms of trade remained unfavourable to the agricultural sector even after the termination of industrial protection in 1991 (Bhalla, 2005). The disparity in the agricultural and non-agricultural sectors can be seen from the official data. During the period 1999-2005, the agricultural GDP growth rate was only 1.7 per cent annually, whereas the growth rate of GDP of the non-agricultural sector exceeded 7 per cent (Government of India, 2013).

**Table-2: Sampling Adequacy for Agrarian Crisis**

<b>KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy</b>		0.626
<b>Bartlett’s test of Sphericity</b>	Chi-Square	31.192
	Degree of Freedom	3
	Sig.	.000

Source: Author’s own calculations

The next table- 3 gives information about the total variance explained by the number of components. It is clear from the table that there is only one component which has an eigenvalue greater than one, thus only one component has been extracted. This first component explains 81.615 per cent of the total variance of the three variables of the agrarian crisis.

**Table 3 : Principal Components and Total Variance Explained**

Component	Initial Eigen values		
	Total	% of Variance	Cumulative %
1	2.448	81.615	81.615
2	0.430	14.337	95.952
3	0.121	4.048	100.000

Extraction Method:- Principal Component Analysis

Source: Author’s own calculations

The next table 4 shows the composite index of agrarian crisis in India. By using the SPSS procedure, only one component was extracted, and these component scores were used as a composite index of agrarian crisis. It is clear from the table that this non-standardized index has both positive and negative values but for the analysis, positive values are required for easy interpretations. Thus, for further analysis, a standardized index has been constructed.

It is apparent from the table that the values of the standardised index are increasing from 0.269 in 1996-97 to 1.00 in 2012-13, and meagrely

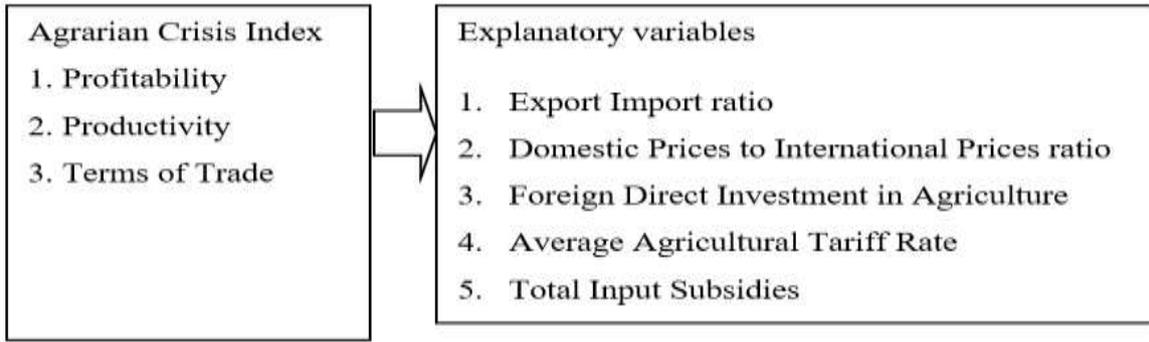
decreased to 0.984 in 2013-14. But the overall trend is increasing under the study period, which clarifies the increasing agrarian crisis in the Indian economy. It is concluded in various studies that the performance of Indian agriculture was very poor and unsatisfactory since 1994 (Dev, 2008). Siddiqui (2014) pointed out that the 250,000 farmer suicides between 1997 and 2012 in the post-reform period are a clear sign of distress in the Indian agriculture sector. Tripathi (2013) also stated that the post-reform period (1995-96 to 2004-05) was a phase of lacklustre performance for most of the crops.

**Table 4 : Composite Index of Agrarian Crisis in India (1996-2014)**

Years	Agrarian Crisis Index	
	Non-Standardized Index	Standardized Index
1996-97	-0.501	0.269
1997-98	-0.678	0.209
1998-99	-0.366	0.315
1999-00	-0.600	0.236
2000-01	-0.964	0.112
2001-02	-0.757	0.182
2002-03	-1.294	0.000
2003-04	-0.587	0.240
2004-05	-0.788	0.172
2005-06	-0.742	0.188
2006-07	-0.343	0.323
2007-08	0.043	0.454
2008-09	0.238	0.521
2009-10	1.220	0.854
2010-11	1.582	0.977
2011-12	1.285	0.876
2012-13	1.649	1.000
2013-14	1.602	0.984

Extraction Method:- Principal Component Analysis

Source: Author's own calculations by using IBM SPSS Statistics 21



**Multiple Regression Analysis**

After constructing the index of agrarian crisis, five variables have been selected to regress on this dependent variable. The regression analysis has been carried out using SPSS. The following text box gives detail of dependent and independent variables.

1. Exports to Import Ratio: The collapse in the price of agricultural goods, the elimination of quantitative restrictions and reduction of import duties in accordance with WTO commitments, and the country's open import policies had a negative impact on India's agricultural sector.
2. Domestic to International Prices Ratio: The competitiveness of a commodity depends upon the level of domestic prices relative to international prices. Many studies found that the fall in the international prices of cotton was one of the important reasons behind the farmers' distress and suicides in Vidarbha and Andhra Pradesh during the period 1995-2011 (Sharma, 2016).
3. Share of FDI in Agriculture: The World Bank claims that India will gain from the opening of the agriculture sector to FDI. But the share of FDI in

the agricultural sector always remained low. This is due to lack of a technological base and the primitive structure of the sector.

4. Average Agricultural Tariff Rate: Due to quantitative restrictions, tariffs had a little impact on Indian agriculture, while tariff reductions invariably resulted in increased imports.
5. Total Input Subsidies: Since the Amber Box Subsidies were deemed to be trade-distorting, the WTO allowed for agreements to gradually reduce their use. Nevertheless, the cutback in these subsidies adversely affected the agriculture production and income of farmers.

The model summary is explained in table IX, the value of R is 0.779 i.e 77.9 per cent which shows the correlation between agrarian crisis and its causes. And the variability accounted in the model is 0.606, which is the value of R square, therefore 60.6 per cent of the variability in dependent variables is explained by independent variables. The table also shows the value of the Durbin-Watson test which is between 1.5 to 2.5 i.e 2.475, indicating no problem of autocorrelation in the model.

**Table - 5 : Summary of Model**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.779	0.606	0.442	1.1626	2.475

Source: Author's own calculations

The final regression model has been inferred from Table- 6 by using the unstandardised coefficients. The table shows that only two variables come out

to be statistically significant at a 5 per cent level. These are domestic to international price ratio (lnDIPR) and total input subsidies (lnINPSUB).

**Table 6: Results of Multiple Linear Regression Analysis**

Model	Regression coefficient	Std. error	t-value	Sign
(Constant)	1.978	18.084	0.109	0.915
lnEXIM	2.576	1.445	1.783	0.100
lnFDI	0.411	0.261	1.576	0.141
lnDIPR	6.575	2.739	2.400*	0.034
lnTRF	-7.594	3.881	-1.957	0.074
lnINPSUB	2.023	0.787	2.571*	0.024

Source: Author's own calculations

\*Significant at 5 per cent level

$$\ln ACI = 1.978 + 2.576 (\ln EXIM) + 0.411 (\ln FDI) + 6.575 (\ln DIPR) - 7.594 (\ln TRF) + 2.023 (\ln INPSUB)$$

The regression equation explains that the three variables export/import ratio, FDI and average agricultural tariff rate have no significant impact on the agrarian crisis. Only two variables are statistically significant.

The first variable is the domestic to international prices ratio, which is positively correlated with agrarian crisis. The P value (0.03 which is less than 0.05) reveals that with an increase in domestic to international prices ratio, agrarian crisis will also increase because higher domestic prices and lower international prices cannot compete in the world

market and this leads to more imports in the country.

Sharma (2016) reported that during 1995-2006, the high domestic support by the developed countries decreased international prices which led to farmer's distress in developing countries like India.

The second variable which comes out to be significant in the model is total subsidies in the agricultural sector. It is positive and significant at 5 per cent level, which demonstrates that an increase in these subsidies will increase

agrarian crisis. Although it is increasing in nominal terms, the share of agricultural subsidies as a per cent of agricultural production, is very much low. Therefore, the low share leads to an increasing value of agrarian crisis.

#### 4. Conclusions and Policy Implications

In a nutshell, economic reforms have failed to transform agriculture into a growth engine and have instead increased its vulnerability due to reduced subsidies and public investment, limited FDI, and the adverse effects of MNCs. Addressing the agrarian crisis requires substantial changes in agricultural policies rather than short-term measures. Trade liberalisation has raised domestic foodgrain prices, making it essential for India to continue supporting farmers through adequate subsidies. At the same time, export promotion of high-value, processed, horticultural, and marine products, along with market reforms and investment in infrastructure, is necessary to improve agricultural competitiveness.

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## Beyond the Gross Domestic Product: Integration of Unpaid Work of Women into National Accounts

**Sneha Santosh Vyas**

Research Student,

Department of Economics, PVP College,  
Pravaranagar, Dist. Rahata, Ahmednagar,  
Savitribai Phule Pune University (SPPU),  
Ganeshkhind, Pune, Maharashtra.

Email : [snehavyas1208@gmail.com](mailto:snehavyas1208@gmail.com)

**Rajendra Yashwant Shinde**

Department of Economics,

Pemraj Sarda College, Savedi Road,  
Ahmednagar, Savitribai Phule Pune  
University (SPPU), Ganeshkhind, Pune,  
Maharashtra.

Email : [dr.r.y.shinde@gmail.com](mailto:dr.r.y.shinde@gmail.com)

### Abstract:

*This research paper explores how and why unpaid work is excluded from national income metrics. Unpaid work, which involves domestic and care work, remains excluded from the System of National Accounts' (SNA) Production Boundary; this leads to incomplete economic indicators. This study critically examines the SNA framework, highlighting its limitations in capturing non-market activities and their economic value. Through a socio-economic approach, the paper deeply studies methodologies such as the opportunity cost method, replacement cost method, and time-use surveys to measure and value unpaid work. To avoid underestimation or overestimation of these services, we reviewed extensive literature on various theories and case studies trying to include unpaid work in national accounts. The findings of the paper highlight the importance of unpaid work and its contribution to societal welfare and male-female equality. The paper proposes expanding the SNA production boundary to include unpaid work in the GDP.*

**Keywords:** System of National Accounts, Production Boundary, Unpaid Work, Gross Domestic Product.

### 1. Introduction:

This research paper focuses on finding where unpaid work fits within the System of National Accounts (SNA) and the general production boundaries. It examines how unpaid work such as cleaning and cooking, child care, elder care, and volunteer work is defined, measured, and given value in economic terms. These activities, though essential, are often not counted in traditional economic measures such as GDP. The paper will look into the SNA methods, why the current boundaries are set, and how these boundaries affect the recognition of unpaid work. It will also discuss the implications of this

exclusion for policy and economic understanding and consider changes to better include unpaid work.

The System of National Accounts (SNA) is a global standard for measuring economic activity. It defines the production boundary for activities included in the Gross Domestic Product (GDP). The SNA involves accounts for goods and services, production, income, spending, capital, financial, and international transactions. Goods and services accounts are estimated based on transactions, i.e., the SNA records goods when their economic ownership changes. Output value is usually estimated at market value at the factory

gate. This is a common issue for unpaid work since production and consumption of such work happen at the same time.

Moreover, these services are not transacted in market, so naturally they do not make it in the production boundary of the SNA.

That is why, the SNA's production boundary has been critiqued for excluding various forms of unpaid work, such as household labor and caregiving, from its calculations. Unpaid work, despite its significant economic value and contribution to well-being, remains largely invisible in national accounts, leading to incomplete economic indicators and potentially skewed policy decisions.

## 2. Objectives:

- This research paper mainly aims to understand why the Social Accounting Framework (SNA) does not include unpaid work. We will investigate the criteria that SNA uses to include economic activities in national accounts and why it leaves out unpaid household and care work.
- We also plan to look at different ways to measure and value unpaid work, considering their pros and cons and how they might be included in national accounts. We'll review methods like opportunity cost, replacement cost, and time-use surveys to find the best way to reflect the economic value of unpaid work.
- Furthermore, we will analyze how unpaid work fits within the SNA's production boundary and the general production boundary to better understand its economic and social importance. Our goal is to advocate for a broader view of economic activity, recognizing all forms of

labor's contributions to national and global economies.

## 3. Methods:

This research work employs secondary data sources to conduct its analysis. A systematic review of scholarly articles, books, and reports was conducted to gain insights into the theoretical foundations of Social Network Analysis (SNA). Additionally, the economic and social implications of unpaid work were explored. Furthermore, the criticisms of current economic accounting practices were examined by reviewing the existing literature. This research paper collected data from academic databases, peer-reviewed articles, and accessed books. Moreover, the synthesis of reports from international organizations such as the United Nations and the Organization for Economic Co-operation and Development (OECD) and the review of publications from feminist economics perspectives were undertaken. The literature review sought to comprehend the reasons behind the current production boundaries and the methods for valuing unpaid work. It also addressed the debates surrounding the inclusion of unpaid labor in national accounts.

## 4. Theoretical framework:

Let's delve into the Theoretical Framework, which forms the bedrock of comprehending the conceptual foundations of the System of National Accounts (SNA), the production boundary, and the general production boundary. Within these frameworks, we'll also explore the classification and significance of unpaid work.

In the System of National Accounts (SNA) "Production Boundary" determines which activities are included

(and excluded) in the calculation of Gross Domestic Product (GDP). According to the SNA, for an activity to be included within the production boundary, it must involve the production of goods or services that are supplied to entities other than the producers themselves or intended for barter or self-consumption.

The Unpaid work whether domestic or caregiving services do not get included in the System of national accounts. The 19th International Conference on Labor Statisticians (ICLS-19) was conducted at Geneva in 2013. The committee suggested inclusion of unpaid work which is used to produce 'goods' for own use. These products are not exchanged in market, but they are valued at market prices. The ICLS-19 endorsed measurement of all types of work, including unpaid work. Despite the recommendations, Indian statistics traditionally excludes most forms of unpaid work, particularly those related to household production and caregiving, arguing that these activities do not involve market transactions.

Moreover, the unpaid "services" are completely excluded from the production boundary of the SNA. The general production boundary proposes an expansion of the SNA framework to include a wider array of non-market activities, particularly unpaid services. This expanded boundary recognizes that unpaid work, such as caregiving, household maintenance, and volunteer services, contributes significantly to societal well-being and economic sustainability. The rationale behind broadening the production boundary lies in acknowledging the economic value of these activities, promoting a more holistic understanding of economic production, and enhancing the comparability of national accounts.

## 5. The Concept and Types of Unpaid Work:

Unpaid domestic and care work refers to activities and labor performed within households or for family members without any financial compensation. This work is essential for the well-being of individuals and communities. It contributes significantly to the economy, and it is often undervalued and not accounted for in traditional economic measures like GDP. The burden of unpaid domestic and care work is disproportionately carried by women and girls worldwide, contributing to gender inequalities in employment, wages, and leisure time.

### 5.1. Categories of Unpaid Domestic and Care Work:

- a. Household Maintenance: Activities involved in managing and maintaining a household's day-to-day operations. These tasks are essential for creating a functional and comfortable living environment.
  - Cleaning and tidying (e.g., sweeping, mopping, dusting)
  - Laundry (washing, ironing, and arranging clothes)
  - Meal preparation and cooking
  - Washing utensils
  - Home repairs and maintenance
  - Gardening and yard work
  - Managing household supplies and shopping for groceries
- b. Caregiving for Family Members: Providing care and support to children, the elderly, the sick, and people with disabilities or special needs. This category encompasses both physical care and emotional support.
  - Childcare (feeding, bathing, and supervising children)



This diagram presents a structured framework to divide various forms of work on the basis of two dimensions: whether it's for personal consumption or for others and its relation with the 2008 System of National Accounts (SNA), which defines what constitutes national income statistics, such as GDP.

On the left side, it illustrates own-use production, which involves individuals creating goods or services for their own household's needs, such as cooking, cleaning, or gardening. While these activities are genuine forms of work, they are excluded from the SNA production boundary, meaning they are not included in GDP calculations.

In the middle section, it categorizes forms like paid employment, unpaid trainee work, and other economic activities performed for others. These activities are considered within the SNA production boundary, thereby contributing to national accounts.

On the right side, volunteer work is presented. It can be conducted through organizations or directly for households. Although unpaid, it is recognized as a productive activity and placed within the broader production framework, but outside the core SNA boundary. The left side of the diagram is our target work of research.

### 7. Implication of excluding Unpaid Services from the System of National Accounts:

- a. Inaccurate Welfare Policies: Excluding unpaid work from economic indicators leads to policy blind spots, particularly in areas such as social welfare, labor market policies, and gender equality initiatives.

- b. Inefficient Resource Allocation: Without recognizing the value of unpaid work, governments may allocate resources inefficiently, neglecting sectors and populations most in need of support.
- c. Aggravating Gender Inequalities: The exclusion of unpaid work from economic metrics exacerbates social inequalities, especially gender inequalities, by failing to acknowledge and value the contributions of caregivers and household workers.
- d. Ignoring the Economic Contributions of women: The domestic and care work has immense economic significance. Apart from the monetary value of these services, they form as the foundation on which all the employment is dependent.

### 8. How to include unpaid Work in the SNA?

Unpaid work plays an important role in economic production and societal welfare. If we measure and value unpaid work, it could change how we view economic output and labor markets. Economists have developed ways to put a value on unpaid work. These include the opportunity cost method, the replacement cost method, and the input-output method. These methods aim to estimate how much unpaid work is worth in money terms. They suggest that unpaid work makes up a large part of actual economic output.

Several methodologies have been proposed and implemented to measure and value unpaid work, each with its advantages and challenges:

- a. Opportunity Cost Method: Valuing unpaid work by the income a person could have earned if they had spent

the same amount of time working in a paid job. While this method acknowledges the economic value of time, it may overvalue unpaid work in high-income brackets and undervalue it in low-income brackets.

- b. **Replacement Cost Method:** Estimating the cost of replacing unpaid work with paid services, such as hiring a childcare provider or a professional cleaner. This approach provides a tangible value for unpaid work but may not fully capture the personal and societal value of care work.
- c. **Input-Output Method:** Using input-output tables to estimate the economic value of goods and services produced through unpaid work. This comprehensive method considers the wider economic impacts but is complex and data intensive.

All these methods have their own pros and cons, they are not without criticism. It is also not one size fits all. Some economies are better off if they use opportunity cost method, others with input-output method. In case of Indian Economy, replacement method is most suggestive. India is a developing country, much of the economy is informal and many sectors still unorganized. In such case, opportunity method can overestimate the value of unpaid work. Similarly, the input-output method might underestimate the monetary value of care work.

## 9. Recommendations:

To include unpaid work in national accounts, a fundamental reevaluation of the SNA production boundary is necessary. This adjustment would involve expanding the definition of economic activity, broadening the scope of what is considered economic activity to include non-market

transactions, especially those related to household production and caregiving. Other ways would be integrating time-use surveys as a standard measure across countries to quantify the amount of time spent on unpaid work, thereby facilitating its valuation and inclusion in national accounts. Lastly, developing a satellite account that operates alongside the standard national accounts will help. Satellite accounts are like proxies for the value of unmeasured work; they allow a more flexible integration of this data into economic analyses without altering the core structure of the SNA.

## 10. Conclusion:

This research paper underscores the substantial economic and social importance of unpaid work. It critically examines the current limitations of the Social Accounting Framework (SNA) and proposes innovative methodologies for its inclusion and valuation. Unpaid work plays a significant role in contributing to economic and societal welfare, yet it remains largely overlooked within conventional economic accounting systems. By expanding the SNA's production boundary to encompass unpaid work and adopting appropriate measurement and valuation techniques, we can gain a more accurate and comprehensive understanding of economic activity. International initiatives and case studies provide compelling evidence of the practicality and advantages of recognizing unpaid work within national accounts.

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## Analysis of Women Participation in Life Insurance sector in India

**Lalee Sharma**

Assistant Professor, Department of Commerce,  
Govt V.Y.T. P.G. Autonomous College, Durg, C.G.  
e-mail: sharmalalee@gmail.com Mob.: 9425564230

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### Abstract

*This study focuses on the changing role of women in life insurance sector in India in terms of their role as the policy-holders as well as agents. Historically, women have demonstrated a conservative outlook to financial investments with some of the reasons being traditional gender roles, lack of financial literacy, and economic constraints. Despite all of these challenges, recent data sees a positive trend of the female engagement in the life insurance market. To further highlight, by analysing secondary data of various states of India by financial year 2022-23, the ratio of women's insurances is higher than the all-India Average (34.20%) in 15 states /UTs which reveals that women are having a significant presence in the sector, the ongoing barriers such as discriminatory regulations, lack of financial resource access and societal biases continue to exist to restrict full participation of women in the sector, and to improve women's participation in the sector, a multifaceted approach is recommended which involves enhancing financial literacy, developing products that suit the needs. By overcoming barriers that are in place and leveraging strategic initiatives, the contribution of women in India's insurance segment can take us a long way, and consequently, achieve financial empowerment and innovation on a macro level.*

**Keywords:** Women insurers, Women insurance agents, Public and Private Insurers.

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### Introduction

Recent researches highlight the fact that the achievement of gender equality is not solely an issue of social justice, but a clever economic choice. The potential of women has been used as a force for economic growth and development as a global community which is a very untapped potential because traditional roles of women in Indian society, mainly that they are the stay at home wives and mothers. However, recently there has been (and continues to be) a change. Women now play a pivotal role in the management of household finance often taking the lead of being the 'cash boss' within Indian communities. Over the year women's roles have grown from restrictive and marginalized roles to

ones characterized by liberation and active engagement. Women have made great gains in education, employment, leadership and representation. Apart from individual benefits, investing in women has larger impacts. Women tend to reinvest a large part of their income in their families and communities. Plus, women are instrumental in building peaceful and stable societies which are necessary for economic growth as a whole. Unfortunately, these advantages are not always recognized, which prevents women from participating fully in the economy.

### Global Insurance and India

Despite the worldwide economic slowdown as well as inflation concerns,

the insurance industry is anticipated to retain its resilience in 2023. The projections suggest a 2.3% growth of the world economy throughout the year, to prop up the insurance sector. As of 2022, India was the 10th largest insurance marketplace in the world with amount of premium standing at \$131 billion. Anticipated growth trajectories indicate that India would move up to 6th place by 2032. Key drivers of the growth of the Indian insurance market are strong economic growth and rising disposable incomes, a young population, growing awareness of risks, digital adoption and regulatory developments.

### Women and Insurance sector

As of March 31, 2023, the Indian insurance industry boasted (Annual Reports, n.d.) agents with 28% of the individual agency force. Women bring unique qualities to the table, to make them more effective in managing insurance-related responsibilities. Women are more prone to bonding and connecting in natural abilities. These qualities are especially useful in the insurance industry where strong communication and persuasion skills are important. The empathetic and intuitive nature of the female also plays a large part in these claim processing and underwriting type roles for which the winning of the trust of the stakeholders involved are paramount. In their day-to-day lives, women confront the problems and solve them with the help of the practical issues. This ability to solve problems plays well into the dynamic insurance environment.

Diverse challenges are faced by the insurance professionals everyday and they demand creatively for solutions and analyzing them. Being excellent problem solvers, women are

predisposed for such roles. While there is a perception that women are more risk averse, it's important to consider this to be a way of having a balanced approach to risk. Women's risk management skills - a combination of analytical skills and soft skills - makes women valuable contributions to the industry. Here are some of the points to consider: - It is important to accept and enhance these contributions in the space to build a more inclusive and effective insurance landscape in India.

### Literature Review

(SampathKumar & Rani, n.d.) conducted a study to investigate the investment preferences of women in the unorganized sector in regard to life insurance products. To be specific in this context, it examined how demographic variables affect their investment decisions. Most of the women policyholders in the unorganized sector had insurance coverage of less than Rs. 1,00,000. Their annual premium payments usually did not exceed Rs. 2000. The main reason given by women policyholders when deciding to invest in insurance was risk insurance.

(PATIL et al. n.d) carried out the study on working women in terms of their perceptions and preferences regarding life insurance since 2000. It attempted to assess the decision-making process undertaken by working women policyholders when making investments in life insurance companies. Factors such as age, marital status, education and employment status contributed to the formation of women's preferences and investment decisions.

(Pradeepa & Ananth, 2022) conducted a study on the investment decision and also the challenges faced by working women on the Life Insurance

Corporation of India (LIC) in Chennai city. Most women invest their money keeping their child's needs in mind.

(*Akilanayaki & Gopi, n.d.*) studied the satisfaction levels of the working women policyholders for the services provided by the LIC. They revealed a medium level of satisfaction within working women policy holders. Several variables such as marital status, educational qualification, awareness levels, utilization patterns, and recommending them to others had significant effects on their satisfaction level.

(*Kour & Sudan, 2018*), conducted a study with the aim of investigating the role of women leaders in influencing the employee satisfaction within the context of the insurance industry of Jammu and Kashmir (J&K). The results of structural equation modeling (SEM) show that the use of a transformational leadership style among women leaders has a positive impact on their employees' satisfaction. This impact is seen in both the public and private insurance organizations.

(*Krishnekumaar & Dr Meenakshisundaram, 2015*) carried out the study on women's empowerment, community participation, health insurance awareness in India. The study examines the implications experienced by women related underinsurance and noninsurance. Community involvement is an important part of the expansion of the reach of the health insurance.

(*Singh et al., 2012*) carried out study to identify occupational stressors among the female employees of an insurance company. It was focused on factors that affect job satisfaction and stress levels. Female employees' satisfaction levels

were affected by a few- Education level, Age, Regular vs overtime work role. Interestingly, satisfaction did not depend on the name of the company (public or private sector), on marital status or on the kind of job. The study also showed that there is a significant positive correlation between job dissatisfaction and stress. Long work hours were found to be one of the sources of stress, as it disturbs the work life relationship of the insurance employees.

(*Rajendran, 2012*) analysed the level of participation of Rural Women clients of microfinance in micro insurance. The study concludes that the level of participation in micro insurance is very low and the main reason is the lack of awareness. Even though micro insurance is treated as a part of micro finance programme the reality is poor participation in micro insurance programme among the participant's micro finance.

### Research Methodology

This research paper has focused on descriptive research to analyze the changing trends related to the women involvement in the life insurance sector. By studying the secondary data, the researcher dives into the evolving scenario of representation of gender in this sector. Secondary data was gathered from a number of reliable sources such as annual reports of the Insurance Regulatory and Development Authority (IRDA), scholarly journals and research articles and reputed websites. The data covers the period from 2017-18 and 2022-23 (Annual Reports, n.d.). The information collected was analyzed and presented and suitable tables. To fulfill the purpose of the study, there was a tabular analysis in which year-wise percentage share was focused.

## Research Gap

Numerous studies have been conducted in examining various aspects of women participation in life insurance in India. Studies have focused on women workers and their views on health security with the issue of awareness and attitudes and adoption. Various researchers have addressed the question of the influence of women's empowerment on their involvement with health insurance. Many investigators dig in the factors shaping the investment decisions of women policyholders. Despite these studies, there is a gap in the understanding of the full participation of women in the life insurance sector.

This research seeks to contribute to a comprehensive understanding of women's roles in the Indian life insurance industry.

## Objectives of the study

Taking into consideration the productive and optimistic participation of women in life insurance sector, the present study "Analysis of Women Participation in Life Insurance sector in India" has been undertaken with the following specific objectives

1. To study the trend of women participation in life insurance as policyholder in India.
2. To study the private and public life insurers contribution on women in life insurance sector.
3. To study the women participation in life insurance (agent) marketing in India.
4. To study the women participation in life insurance in each state.

## Data Analysis and Interpretation

Table-1 shows the women's

participation in life insurance as policyholder in India. The total number of life insurance policies issued fluctuates slightly over the years, with a peak in 2021-22 (2.91) and a low in 2020-21 (2.81). This fluctuation indicates some variability in the overall insurance market.

**Table-1 Women participation in life insurance as policyholder in India**

Year	Total No. of policies issued	No. of policies issued to women	Share of women %
2017-18	2.82	0.90	32
2018-19	2.86	1.03	36
2019-20	2.88	0.93	32.23
2020-21	2.81	0.93	33
2021-22	2.91	1.01	34.7
2022-23	2.84	0.97	34.20

*Source: Self compiled from IRDA Annual Reports*

The number of policies issued to women shows variability but generally follows the trend of total policies. The highest number of policies issued to women was in 2018-19 (1.03), and the lowest was in 2017-18 (0.90). The percentage share of women policyholders in total policies issued has seen a gradual increase over the years. Starting at 32% in 2017-18, it increased to 36% in 2018-19, then fluctuated slightly but generally remained above 32% through 2022-23. There is a subtle upward movement from 32% in 2017-18 to 34.20% in 2022-23, indicating a continuous growth in the participation of women in life insurance in last years.

In summary, while the total number of life insurance policies issued experienced some fluctuation, the proportion of women policyholders

showed a gradual and positive trend, reflecting increasing engagement of women in life insurance in India over the observed period.

**Table-2 Private and Public life insurers contribution toward women in life insurance sector**

Year	Public life insurers		Private life insurers	
	proportion of policies on men	proportion of policies on women	proportion of policies on men	proportion of policies on women
2018-19	61%	39%	73%	27%
2019-20	66%	34%	73%	27%
2020-21	65%	35%	73%	27%
2021-22	64%	36%	71%	29%
2022-23	64%	36%	70%	30%

Source: Self compiled from IRDA Annual Reports

The table compares the contributions of public and private life insurers in terms of policies issued to men and women from 2018-19 to 2022-23. The proportion of policies issued to women by public life insurers has been relatively stable, ranging from 34% to 36% over the years. There is a slight increase in the proportion of policies issued to women, from 39% in 2018-19 to 36% in 2022-23, suggesting a marginally improving trend.

The proportion of policies issued to women provided by private life insurers has remained relatively consistent ranging from 27%. and 30% over the same period There is a slight increase in the proportion of policies issued to women from 27% in 2018-19 to 30% in 2022-23, showing a slow but positive trend.

Public life insurers have always offered more policies to women than have private life insurers. For instance, in 2022-23, public insurers offered 36% of their life insurance policies to women, while 30% were offered by private insurers.<sup>1</sup> Which indicates that the public life insurers have a slightly better

score in their engagement with female policies as compared to the private insurers.

The ratio of the policies issued to men, by public insurers, show a low constant trend pattern what this is for a constant target demographic over the years. Policies issued to women have been gradually increasing, which means that the public insurance companies are making some progress in addressing the gender diversity.

The proportion of policies issued to men by private insurers is high and stable between 70% and 73%, with a small decline towards the end of the period, while the proportion of policies issued to women has experienced a minor growth, especially in the last year. This improvement by a mm suggests a step by step process towards more inclusive practices.

The number of women in the job role as insurance agents is steadily on a rise from 603,208 in March with 2019 to 745,000 in March with 2023. 23.5% is the increase of growth in the involvement of the female population in working insurance industry as agent

during the timeframe period of 5 years. i.e. there is steady increasing in the role of women insurance agent has been gradually increasing. 23.5% is the increase of growth in the involvement of the female population in working

insurance industry as agent during the timeframe period of 5 years. i.e. there is steady increasing in the role of women insurance agent has been gradually increasing.

**Table-3 : Women participation in life insurance (agent) marketing in India.**

Period (as at)	Women are working as agents	Per cent of the total individual agency	Proportion of LIC	Proportion of Private life insurers
March 31, 2019	6,03,208	27%	48%	52%
March 31, 2020	6,15,609	27 %	45 %	55 %
March 31, 2021	6.61,390	27%	47%	53 %
March 31, 2022	6,99,429	29 %	48%	52%
March 31, 2023	7,45,000	28%	43%	57%

Source: Self compiled from IRDA Annual Reports

The percentage of women in the total number of individual insurance agents has been relatively stable at around 27-29% over the period there is a small increase from 27% in 2019 to 29% in 2022, suggestive of a small but positive change in the representation of women in the insurance agency sector.

The number of women in agencies working for LIC (Life Insurance Corporation of India) has varied. It was 48% in 2019, it went below 43% in 2023. It shows that the relative share of women agents working with LIC is declining compared to private life insurers.

On the other hand, the rate of women

working as agents of private life insurance companies rose from 52% in 2019 to 57% in 2023. That is, although the overall number of female agents has increased, an increasing number of these agents are working for private life insurance companies.

The jump in absolute number of women insurance agents and steady percentage of their representation reflects an increased awareness and acceptance of women in the insurance agency profession. The change from LIC to private insurers signals a changing market for the insurance industry where private insurers are attracting a larger proportion of female agents.

**Table-4 : Women participation in life insurance in each state**

Top 5 States/ UT with highest share in number of policies bought by women		Bottom 5 States/UT with the least share in number of policies bought by women	
State	Share of total Policies in the State %	State	Share of total Policies in the State %
Karnataka	44.23	Gujarat	29.59
Kerala	43.96	Uttar Pradesh	29.53
Mizoram	42.97	Jammu Kashmir	28.07
Sikkim	42.6	Haryana	27.16
Meghalaya	41.81	Ladakh	23.10
<b>All-India Average</b>		<b>34.20</b>	

Source: Self compiled from IRDA Annual Reports

The table compares the ratio of policies taken by women in the top 5 and bottom 5 states UT India, which highlights the presence of significant regional disparities in the level of female participation in the life insurance sector. Of this, Karnataka has the highest share of bought policies by women at much higher than the all-India average of 34.20%. This depicts a high involvement of women in the life insurance market of this state. Kerala comes a close second with a high share of 43.96%. This is suggestive of a well rooted culture regarding life insurance among women of Kerala which is possibly due to high literacy rate and presence of good financial awareness.

Mizoram also has a high percentage of policy purchased by women. This represents a rather high level of engagement in a relatively smaller state, perhaps being due to local socio-economic factors or selective insurance programs. Sikkim is another small state that has high female participation in life insurance suggesting effective outreach or high female financial literacy in the region. Sikkim, an additional small state, rounds-off the top five with a strong 41.81%. This infers that women in Meghalaya are also actively engaging in life insurance which might be a result of regional efforts further or insurance products designed to suit their needs.

Out of the listed states, Gujarat has the lowest percentage of policies which are bought by women. This is a huge gap with respect to the best performing and could well be due to socio-economic barriers or regional preferences to lower female participation. Uttar Pradesh, similar to Gujarat, with a similar share, is also found to have low female participation. Given its large population, this is a good potential

market for liabilities toward increasing women's engagement in life insurance. Jammu & Kashmir has a relatively low share of women policyholders. This could be due to some regional challenges or less aggressive marketing and outreach efforts in the region. Haryana has the fourth lowest share, which shows that the participation of women in life insurance is not as high as compared to other states. This could be attributed to their varying degrees of financial literacy or accessibility to insurance. Ladakh has the lowest number of policies purchased by women out of the listed states. Given its geographical and demographic features, this humble share could potentially reflect investment difficulties to reach and engage women in this region.

States with high participation of females in life insurance (including Karnataka, Kerala, Mizoram, Sikkim and Meghalaya) generally have shares way above the all-India average of 34.20%. These states probably have more access to financial education, more available insurance products, or even have specific outreach programs to women.

The states with a lowest share are below the all-India average. These states could be challenged by comparatively low levels of financial literacy, socio-economic barriers or less effective insurance distribution networks.

There is a significant gap in the participation of women in life insurance from various states. While some states have managed to engage significant proportion of women, still there are others who lag considerably behind. States with a lesser female participation offer opportunities for focusing specific interventions to enhance participation. Customized financial education initiatives and community-specific

outreach efforts could help to improve the numbers transformed.<sup>3</sup> The top-performing states could be viewed as models for best practices in enhancing the level of female participation, for example, through community-based initiatives or by working with local organizations.

### Discussion

Women make up about 49% of the total population of India. Their contribution to the economic state of the country is not only huge but growing year by year. Given this context, life insurers need to be aware of the rising significance of the population group to the economy. It is essential that any specific needs or requirements unique to women are identified and tailored product solutions are created to provide adequate life insurance coverage.

The representation of women at the life insurance sector can be explained due to several interrelated factors. One important problem is lack of financial literacy and awareness in women which means they are not able to properly engage with insurance products. In addition, limited access to financial resources and the decision-making process constrains women participation often coupled with adaptation to traditional gender roles and stereotypes which discourages women's participation in financial matters. Economic challenges, such as low income levels and economic instability also make the situation worse and insurance can just seem less accessible/relevant. Family responsibilities and caregiving duties also have a very important currency over time as this can reduce the amount of time and resources women can expend on insurance activities. Moreover, limited knowledge of insurance products and

the benefits they provide, and distrust and lack of confidence problems with insurance providers, can put off women from buying insurance policies. Cultural and social barriers, along with historical and systemic gender biases, lead to other barriers. The inadequacy of insurance insurance products and services designed particularly for women, and gender-biased product design and marketing are also responsible for this disparity. Finally, the insufficient representation of women in the insurance industry itself may drive these challenges.

Public life insurers have shown a better past record in offering policies to women, as they have maintained a higher proportion of women throughout the period. Private life insurers have a lower record of policies issued to women but are beginning to show signs of improvement, though public insurers will still outperform them in taking up female policy holders.

It can be seen that LIC may need to strategize in order to maximise its appeal among female agents, whereas it appears that private insurers are well positioned to take advantage of attracting and retaining female talent.

The data reveals an upward trend in the number of women insurance agents in India with a steady rise in its participation. However, there is some change in their distribution between LIC and private life insurers, with an increasing proportion working for the private insurers. This indicates an active and changing insurance where the private insurers are becoming more attractive for the women agents.

It is revealed that while some states have made impressive inroads in terms of female participation in life insurance, others have huge scope for improving

upon. Understanding and tackling the regional factors that contributed to these disparities can help to then develop the strategies necessary to improve the engagement of women in the life insurance sector across India.

Solving these problems requires a comprehensive and complex solution. Efforts should be made to improve financial literacy and improve access to education and employment opportunities, and create an inclusive industry culture. Industry-wide initiatives are required to encourage safety, diversity and the inclusion of women at all levels of the insurance industry.

### Suggestions

In order to improve the presence of women in the life insurance sector, a number of strategic actions can be undertaken:

1. **Recruitment and Training:** Initiate more specifically designing recruitment campaigns directed at women and advertising via media channels that are popular among female populations and by collaborating with women's organizations and networks. Provide in-depth training on insurance products and sales techniques, and soft skills training, such as communication and negotiation, should also be included.
2. **Mentorship and Support:** Work to develop support networks for women employees to encourage a sense of community and growth as professionals, create mentorship programs to connect less experienced agents with seasoned women professionals
3. **Flexible Work Arrangements:** Offer flexible working hours or offer the option of remote working if

possible or job-sharing arrangements for workers dealing with family commitment and caregiving responsibilities.

4. **Inclusive Workplace Culture:** Promote gender diversity and inclusion within the workplace, address unconscious biases and stereotypes and implement policies to prevent harassment and discrimination.
5. **Leadership Opportunities and Development:** Identify and foster potential women leaders in the organization, provide training and opportunities for career development and encourage women agents to take on leadership positions.
6. **Marketing and Sales Strategies:** Develop and marketing insurance products and insurance marketing campaigns aimed at women. Train station agents to communicate well with female customers.
7. **Support and Resources:** Establish a dedicated support team for women agents, provide access to role models and networking opportunities, and provide agents with access to technology and tools to facilitate sales and customer management.
8. **Community Engagement:** Work with women's organizations and community groups on organizing events and seminars with a financial literacy and planning theme. Partner with women-focused in order to expand networking opportunities to share best practices with other insurers.
9. **Incentives and Recognition:** Implement performance-based incentives and rewards for women agents and recognize publicly top-performing women to motivate and inspire other women agents.

**10. Monitoring and Evaluation:**

Regularly monitor and analyse data on the participation and progress of women as well as continuously review and improve approaches based on these results.

By taking these strategies into account, the involvement of women in the life insurance sector can be greatly increased, resulting in a more diverse, inclusive, and successful workforce and sales force.

**Conclusion**

The adage "The hand that rocks the cradle rules the world" indicates the importance women play in the management of finances and investments. Historically, women have had a conservative approach to investing and might have preferred to invest in more conservative options. Consequently, it is important for financial product developers to be aware of gender-specific investment behaviors and to tailor financial products in a way that will more appropriately fit women's preferences with respect to risk and return.

This study focuses on the participation of women in life insurance sector in different states of India using secondary information sources. A systemic analysis was carried out to assess the scenario of women's participation in life insurance policies over the different states. The data shows that in 15 states/UTs purchase of policies is more than the all-India average of 34.20% over the fiscal year 2022-23, is purchased by women. This highlights a lot and active participation by the female gender in the life insurance market in most states. The analysis on the growth trend shows a relatively uniform growth in the participation of women from year to

year amongst the states with little variation in growth rates. Cluster analysis further patterns states by similar trends of women's participation, which draws attention to regional similarities in levels of participation.

Overall, the findings point to a positive trend in women's engagement in life insurance, with the growing realization of women as agents for life insurance. Despite the persistent wage discrimination and uneven status between men and women, government policies and initiatives are slowly improving on women's visibility and roles within the sector.

To further increase the women's participation, the government has inserted programs such as "Insurance for All by 2047", with the aim of widening the insurance envelope and in response to the distinct needs of women. Despite the progress, there are still large pockets of lacking access, mostly due to limited access to insurance, low financial literacy and biases in the society.

To improve woman's participation in insurance industry it is necessary to improve financial inclusion and independence of women in order to enable them to make informed financial decisions to enable the growth and innovation of businesses in insurance sector to develop products that cater the needs of the various women and enhance awareness and education of insurance among women to encourage the establishment of women friendly insurance distribution channels and leadership roles and to also address social and cultural barriers for ensuring that the insurance industry can foster a more equitable and sustainable ecosystem for women and society as a whole.

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## **Economic Impact of Artificial Intelligence on Unorganized sector in India**

**Vijayata Uikey,**

Assistant Professor,  
Dr. Babasaheb Ambedkar School of Law,  
R.T.M. Nagpur University

**Swapnil Fulzele**

4<sup>th</sup> Semester students,  
Dr. Babasaheb Ambedkar School of Law,  
R.T.M. Nagpur University

### **Abstract**

*This paper examines the economic impact of Artificial Intelligence (AI) on the unorganized (informal) sector in India, with a specific focus on road transportation, construction, and agriculture—three sectors that together contribute significantly to employment and GDP. Drawing on secondary data, policy documents, and comparative case studies from 2018-2025, the study analyses how AI-driven technologies such as autonomous vehicles, AI-enabled logistics platforms, 3D printing in construction, and smart agricultural machinery are transforming production processes and labour demand. While AI adoption improves efficiency, productivity, safety, and income prospects for capital owners and technologically equipped firms, it simultaneously threatens large-scale displacement of unskilled and semi-skilled workers who constitute the backbone of India's unorganized workforce. The paper highlights the uneven distribution of gains from AI, growing risks of unemployment, income inequality, and increased dependence on government welfare schemes, particularly among drivers, construction labourers, and landless agricultural workers. It concludes that without adequate skill upgradation, social security mechanisms, and inclusive policy interventions, rapid AI penetration may destabilize employment structures and exacerbate socio-economic vulnerabilities in both rural and urban India*

**Key Words:** *Artificial Intelligence; Unorganized Sector; Informal Employment; Road Transport; Construction Industry; Agriculture; Technological Unemployment; India; Economic Impact; Labour Displacement*

### **Introduction**

The artificial intelligence is prevailing in every sector such as automobile, construction, agriculture, marketing, social media etc., with increasing research and development applicability of AI enhancing new capability of human being. Recently in Bangalore, Indian Post office was build using 3D-printing technology. Tesla introduces driverless car which is AI based and able to transport passenger from one end to another without the human interference. Also in agriculture

sector autonomous tractor and drones are used for agriculture and this will improve the income of the cultivator, although this leads to major unemployment amongst these sectors particularly the unorganized sector labours will face more employment related problems. The economy will get shaken due to development of advanced technology and Indian economy will not sustain at this shift change in the use of latest advance technology, which ultimately cause the distress amongst the rural as well as urban unorganized

sector employment. This paper mainly focuses on the such sectors that have workers of unorganized sectors or informal sector, as of now it's mainly three sectors is identified i.e. are 1) Road transport 2) Agriculture and allied business 3) Construction, having share in the GDP i.e.3.14%, 17.95%, 8.41 % respectively.

This research employs a mixed-methods, qualitative approach grounded in secondary data analysis and case study comparisons. We conducted an extensive review of reports, academic studies, and policy documents from 2018–2025 related to AI in transportation, Agriculture and Construction business.

### AI Role in Road Transportation

AI was theoretical till it was implemented but at the beginning of 21th century, it is become reality now

our day-to-day work is based on AI and most commonly use of mobile phone which is AI enabled. The new era of AI is it can mimic like human being, work on its own based on data it had, able to take decision etc. The Tesla Company has introduced its driverless car and it's seen as future of next generation. The driverless car can take the passenger wherever he wants to go with traffic prediction in very short of time span that usually required more time as a human being. This will provide more safety to passenger and time saving too. However, as the Indian prospective if we see this is endangering to the economy, since majority of Indians are in the profession of transportation and that counts 369 out of 506 in the land transport. It has huge economical value of 294326 crores out of 457152crores from the below table-1.

**Table -1 Gross Value Added by Economic Activity at Constant 2011-2012 prices**

(Rupees Crore)

Economic Activity	2011-12	2012-13	2013-14
Railways	61,210	72,249	78,940
Road Transport	2,60,888	2,80,365	2,94,326
Water Transport	7,193	7,417	7,671
Air Transport	4,454	4,192	4,444
Services Incidental to Transport	63,573	69,153	71,771
<b>Transport - Total</b>	<b>3,97,318</b>	<b>4,33,376</b>	<b>4,57,152</b>
GVA - All Sectors	81,95,546	85,99,224	91,69,787
Share of Transport Sector to GVA (%)	4.8	5.0	5.0
Share of Road Transport to GVA (%)	3.2	3.3	3.2
Share of Road Transport to Transport Sector (%)	65.7	64.7	64.4

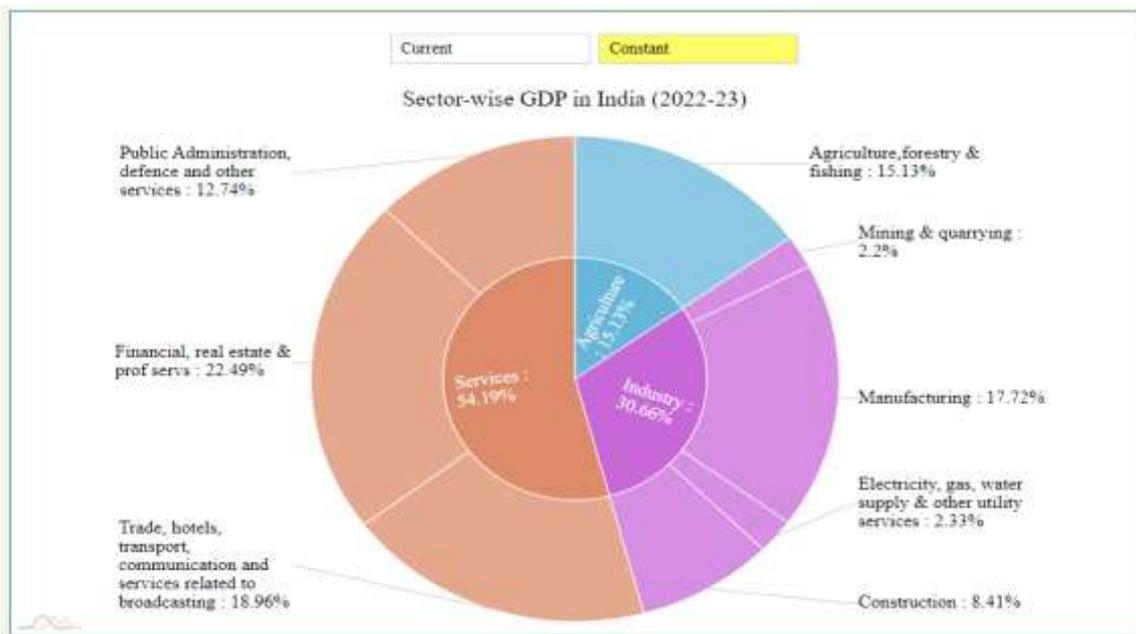
**Source:** *Economic Survey of India*, Ministry of Finance, Government of India, various issues (2013–14, 2014–15); based on National Accounts Statistics, Central Statistics Office (CSO), Ministry of Statistics and Programme Implementation (MOSPI).

The above table explains much more about the economic value with relation to the road transport in India. Once the AI enabled transport entered into the Indian Territory then it will change the

entire economy of the country. Companies having infrastructure for research and development can implement firstly for only the passenger segment that includes cars and buses, in

the next phase they will concentrate over the transport of goods and other allied sectors such as trucks for goods and tractors for agriculture. This leads to change our prominent job shift of unorganized sectors majorly drivers, cleaners, farm workers and there will be shift in the both sectors i.e. lot of workers from unorganized sectors becomes unemployed while very few skilled employees will be employed into

IT sector. Certainly, for this shift Indian economy is not ready and it will not handle such economical unbalance, at one point it will create very few jobs opening for skilled employees more specifically those having knowledge of AI, embedded system and Data science on other hand lakhs of employees engaged in transport sector will lose their employability.



**Fig.1 pie chart of GDP sector wise for year 2022-2023**

**Source:** *Economic Survey of India 2022–23, Ministry of Finance, Government of India (based on National Accounts Statistics, MOSPI).*

The sector-wise GDP composition of India for 2022–23 clearly reveals the structural dominance of services (54.19%), followed by industry (30.66%) and agriculture (15.13%). While these sectors differ in productivity and capital intensity, they share a common characteristic: a high dependence on informal or unorganized workers, particularly in sub-sectors such as agriculture, construction, transport, trade, and personal services. Dominance of Informal Workers Across Sectors. Despite agriculture contributing

only 15.13% to GDP, it continues to absorb a disproportionately large share of India’s workforce, much of it informal, seasonal, and low-skilled. Similarly, within the industrial sector, construction alone accounts for 8.41% of GDP and is overwhelmingly dependent on migrant and unorganized labour. Manufacturing sub-sectors—especially small-scale and ancillary units—also rely heavily on contract and informal workers.

The services sector, which contributes over half of GDP, is often perceived as

formal and skill-intensive; however, a closer look at its composition challenges this assumption. Sub-sectors such as trade, hotels, transport, communication and broadcasting (18.96%), financial, real estate and professional services (22.49%), and public administration and other services (12.74%) encompass vast numbers of informal workers—including drivers, delivery workers, hotel staff, street vendors, construction-linked service providers, and gig workers. Thus, GDP dominance does not translate into employment security or formalization.

#### **Segment-specific impacts:**

Within the unorganized transport sector, AI's effects vary:

**i) Auto-rickshaw and Taxi Drivers:** For those who adopted ride-hailing apps, earnings initially rose due to access to a larger customer base and sometimes higher fares via surge pricing. Some auto drivers report earning ₹300–₹500 extra per day after joining apps. However, increased dependence on app-based rides has made them vulnerable to app policy changes. Traditional stand-based customer relationships have weakened, leading to reliance on smartphone notifications for work. Notably, women drivers – though few – have found platforms somewhat enabling due to safety features (GPS tracking, SOS buttons), with 84% of female riders in one survey saying app rides felt safe potentially opening space for more women to join this male-dominated field.

**ii) Cycle-Rickshaws and E-Rickshaws:** This segment remains largely low-tech, though there are initiatives to integrate e-rickshaw operators into digital marketplaces for last-mile connectivity. Some Indian cities launched pilot apps to book e-rickshaws, but widespread AI

adoption here is minimal. The economic impact of AI is indirect: the popularity of ride-hailing two-wheelers (bike taxis) in some cases has drawn passengers away from cycle rickshaws, pressuring those workers to either upgrade to e-rickshaws or partner with app services for visibility.

**iii) Informal Truckers:** The long-haul trucking sector in India is notoriously inefficient, with many independent truckers relying on brokers at highway dhabas (truck stops) to find return loads. AI-driven logistics platforms are changing this by providing online freight matching. Economic gains include reduced empty return trips (thus higher overall utilization) and faster payment cycles (some platforms pay drivers within days instead of weeks). Early evidence suggests participants on digital freight apps can see income increases of 20–30% due to more consistent load availability. However, many small truckers face digital literacy barriers, and the sector's adoption of AI is still nascent. The economic impact at scale is yet to be realized, but the potential is high to formalize and raise productivity in this unorganized segment.

#### **Artificial Intelligence in Construction as 3d Printing**

In the early 2000 the Mumbai-2 i.e., Navi Mumbai was under developing. The building was constructed using pre-casted room, bedroom, hall, kitchen and toilets at the ground and lifted by cranes and placed accordingly the plan map at each floor. This was the beginning of modernization and adopting latest technology in the field of construction. However, the technology is more advance now and that too it can print the house, building, bridge, flyover, sewer system, dams and disaster shelters using 3D printing mechanism with the help of BIM (building

information modeling) having principle of layered material, with the help of AI and machine Learning thickness is generated in one direction with print command and also prepare 3D map of the structure.

In the year 2016, ACCION company, has prepared the world's first 3D printed pedestrian bridge, 12 meter in length, 1.75 meter wide. Another company involved in this was IAAC, who played a central role in designing the bridge. The bridge was created by using 3D printed microscale reinforced concrete powder with thermoplastic polypropylene, to bear the weight. Based on the generative algorithm porous structure was created to only where it is necessary to strength and efficiency of bridge. In 2020, a 3D 2-story building was constructed in a single piece by L&T Company in Belgium. Till date it is the largest 3D printed structure in the world. Such technology needs very less human interference and manual work. It will have other benefits like prevention of human errors, less accidents, sustainability of business, more efficient in terms of work. Companies are fast to adapt the advance technology to increase their profits and to mitigate human errors.

In India large numbers of unskilled labours migrate from rural area to urban cities in the search of employment. Mostly, class of labors is employed in construction sites. The advance technology will have great impact on the Indian labour market this will create large unemployment in this sector. Since large population of India depends upon the unskilled work due to their educational levels and this population works in unorganized sectors. Labor population has significant contribution in the economy. Adopting

to advance technology like AI enabled 3D printing will lead to more unemployment amongst the unorganized sector and this can unbalance the economy of India. In such situation it will create more burdens on the government schemes like MGREGA, PMAY-G, PMUY and PMGKAY that ultimately hamper the growth of the country. For the year 2022-23 the Government of India allocated 2 lakh Crore towards the PMGKAY scheme for free distribution of 5 kg of rice or wheat for the beneficiary of scheme. Due to unemployment this will create more demand of such schemes and resources for livelihood of unemployed unskilled labours. This advance technology will impact the society at large and economic gaps in the society will increase rapidly.

### **Artificial Intelligent in Agriculture**

Predominately agriculture was the only source for livelihood of the Indians before colonial era. After various evasions and during colonial era trade and commerce was introduced in India but the rural labours were engaged in agriculture and allied works. Bull was used for agriculture later on bull was replaced with tractor along with latest harvesting machines. Now the AI has significant role in agriculture.

In this area *Autonomous Tractors, Fleet of Agribots and Smart drones* are used in farming. The Autonomous Tractor is GPS-controlled autonomous tractor charts, it's automatically ploughs the land, saving fuel and reduce soil erosion and maintain soil quality. Fleet of Agribots, tends to crop, weeding, fertilization and harvesting reduces fertilizer cost up to 90% and eliminate human labour. Smart Drones, survey fields, map weeds, yield and soil variation, enable application of inputs and map productivity. Drones are also used for applying pesticide and

herbicides. These are the Artificial Intelligence empowered equipments used for agriculture activities. This impact the employment of rural areas, particularly in agriculture labours having solely depended upon the agriculture based employment. Since Indian agriculture is the major contributor of employment accounts for 49% of Indian workforce and 16% of the country's GDP. During pandemic it was the only sector that has the positive GDP growth and it maintained rural employment of workforce.

Due to advent of this advance technology, there is lack of opportunity in this field and labour forces migrate towards the urban cities for livelihood and employability. This sector is major employment provider for rural area and it facilitates various a schemes such as PM-KISAN, PMKMY, PMFBY, MISS, and AIF which ultimately leads to frustrate the purpose of scheme, which ensure more income generation for the cultivator and agriculture labours. This advance technology will disturb rural eco-system and there will be more distress in rural employment market, ultimately it will be chaotic and panic situation in rural development. Although it will be very possible, that it will create income disparity within the same eco-system. The cultivator having his own land and equipment becomes more prospers than one who is landless labour. This shows that the artificial intelligence enabled agricultural equipment will definitely increase the income of cultivator but on other hand it will eliminate the jobs of landless labours. These labours are the part of unorganized sector having major contribution to the economic development and growth.

### Conclusion:

Artificial intelligence having pros and cons but the issue is about the economic status of unorganized sector workforce and the impact it will create over the economy. To answer the first issue, it will give aloft status to those who having the company and infrastructure for development of new technology that is AI based and to those who are having big construction companies, also to those cultivators having land and equipment. It will be disastrous to those employees engaged in road transport like driver and cleaner and labours at the construction site and landless labours in the agriculture sector. Indian economies will not be going to sustain if AI becomes in the reach of these sectors and ultimately lead to more unemployment in urban as well as rural areas of the country.

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## The Impact of Artificial Intelligence on the Business Litigation Landscape

**Aditya Kailash Kanojiya**

Ph. D. Research Scholar  
Department of Commerce  
Bharati Vidyapeeth (Deemed-to-be)  
University's Y M College of Arts, Science  
and Commerce, Pune, Maharashtra, India

**Mahesh V. Shitole**

Ph. D. Research Guide  
Department of Commerce  
Bharati Vidyapeeth (Deemed-to-be)  
University, Pune, Maharashtra, India

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### Abstract:

*Artificial intelligence (AI) is transforming business litigation by hastening the process of reviewing evidence, enhancing research in the field of law, and altering dispute-solving processes. The paper will focus on the practical applications of AI in an inheritance case, a bank litigation case, property litigation, and tax litigation cases. The study assesses efficiency gains, evidencing risks, and governing requirements through the mixed methods whereby literature synthesis, case-law review, and surveys of practising litigators and specific interviews are used. Results indicate technology-assisted review will generate time savings that can be measured but present danger with unverified generative outputs. The recommendations given on the policy include transparency, human reconstruction and equalizing validation criterion to maintain procedural fairness and judicial integrity.*

**Keywords:** *Artificial Intelligence, Inheritance matters, Taxation Law, Banking Disputes, Blockchain.*

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### Introduction:

AI tools are now at numerous points of litigation: at the initial case triage and e-Discovery, drafting, and post-judgment compliance monitoring. Their promise is explicit, speed, scale and pattern identification beyond human reach but there are risks of adoption in terms of ethics and evidentiary risks. Courts and regulators are thus setting efficiency gains and accuracy parting ways on bias and the threat of created authorities. The paper discusses the issue of the responsible application of AI in business litigation and specifically deals with Indian law and the comparison of the processes in other jurisdictions.

### Important Definitions of Present Research Study

*Artificial Intelligence (AI):* Systems that perform tasks normally requiring human intelligence (machine learning classifiers, neural networks, LLMs, etc.).

*Predictive coding / Technology Assisted Review (TAR):* Machine-learning workflows used to identify relevant documents in e-discovery.

*Generative AI/LLMs:* Models that generate text (e.g., ChatGPT-style systems) used for drafting, summarization, and research assistance.

*Litigation analytics:* Data-driven tools that predict judge behavior, case outcomes, timelines, or likely damages.

## Need of Present Research Study

The use of AI in litigation is rapidly evolving though unequally distributed; the courts and regulatory bodies continue to work on acceptable usage measures. The empirical, structured investigation is required to:

- (1) measure the efficiency improvements against the accuracy/ethical costs;
- (2) evaluate the effects on litigation expenses and access to justice; and
- (3) suggest the governing structures that balance the need to innovate and procedural fairness.

The timely research is necessary given the recent growth in the use of AI and numerous cases of its misuse.

## Objective of Present Research Study

- (i) To analyse the impact of AI integration on business litigation.
- (ii) To analyse the integration of AI into the government databases to resolve recurring issues.
- (iii) To draw the necessary outcome and conclusion.

## Research Questions / Hypotheses

Primary question: What is the net impact of AI adoption on the efficiency, fairness, and costs of business litigation?

### Hypotheses:

H1 — Use of AI (TAR + analytics) significantly reduces review time and cost while maintaining comparable accuracy to human review when proper validation is used.

H2 — Generative AI tools increase drafting speed but present a measurable risk of factual or citation errors (hallucinations) that can lead to sanctions unless properly supervised.

H3 — Widespread AI adoption is likely to pressure traditional billable-hour

models and accelerate alternative fee arrangements.

## Literature Search (summary) of Present Research Study

Searches covered peer-reviewed articles, legal tech reports, regulatory publications, and case law focusing on: TAR/predictive coding precedent (Da Silva Moore, Global Aerospace and later decisions), surveys of AI adoption (ABA/Thomson Reuters), vendor documentation for Westlaw Edge / Lexis+ (litigation analytics), and press coverage of new AI legal service models (e.g., UK approvals for AI-driven legal services). The literature indicates: judicial acceptance of TAR under documented processes; rapid adoption of AI tools in larger firms; and growing regulatory concern about generative AI producing false authorities.

## Research Methodology of Present Research Study

Design: Mixed methods.

1. Document & Case-Law Analysis: Systematic review of TAR-related orders and recent judiciary statements about AI use
2. Surveys: Structured survey of litigation attorneys (target  $n \approx 300$  across firm sizes) to measure tools used, time savings, error rates, and billing changes
3. Semi-structured Interviews: 20 in-depth interviews with litigation partners, e-discovery vendors, and in-house counsel to capture qualitative effects and governance practices.
4. Case Studies / Field Tests: Compare human-only vs. AI-assisted document review on matched litigation datasets (measure precision/recall, time, and cost).

5. Ethical/Regulatory Analysis: Review guidance from bar associations and recent judicial warnings about hallucinated authorities.

#### Sources of Data and Techniques:

The primary data such as the AI tools like - ChatGPT, Claude, Perplexity AI etc and secondary data used in this study was gathered from Reserve bank of India, Reports of United Nations Population Fund (UNFPA), National Crime Record Bureau (NCRB), Registrar General of India Civil Registration System (CRS) Website. books, and journals.

#### A. Inheritance Claims:

Disputes regarding legal claim to an ancestral property of the immediate legal heirs of the deceased bequeathed through a will or intestate, is typically the understanding of inheritance claims. The concept of Intestate inheritance claims is when a person died without a will for his property and then that property is distributed according to the laws of succession. Whereas the will is a legal instrument which is a declaration made by the deceased who is known as the 'Testator', therein declaring who shall own his property upon his death. India with 143.81 Crores population is faced with the issue of multiple property documents and disputes across the urban and rural areas. It becomes a herculean task to store such documents or instruments manually. Therefore, it is effortless to retrieve data stored digitally with the help of AI because of AI's peculiarity of pulling out information from the big data sources.

***How can AI assist in verifying testamentary documents and tracing lineage in inheritance-related litigation?***

As mentioned above India with crores of population is faced with many testamentary documents Wills in rural and semi-urban India are handwritten or unregistered, which can make it prima facie challenging to trace their authenticity upon the death of the testator. Nevertheless, it leads to prolonged probate litigation and thereby results in longstanding inheritance litigation. The issue is compounded by the missing documents, forged signatures, and tampered lineage history. Integrating AI can be recommended for examining the registered and unregistered handwritten wills, using powering tools like Optical Character recognition (OCR) which make it possible to read and comprehend images and handwritten documents easily. Similarly, with AI and its feature of forensic signature analysis, tampered and forged documents can be identified. AI is capable of deciphering the language contained in document and extracting relevant data, including names, relationships, and properties that have been bequeathed earlier. Furthermore, in matrilineal societies where descent is through the line of the mother, machine learning models can reconstruct family trees and trace ancestry by analysing large datasets like Aadhaar, Civil Registration System (CRS), voter records, and property tax databases. Even in cases where oral traditions or customary laws exists, AI can aid in tracing early courts pronouncements in identifying the legitimate heirs. Additionally, blockchain integration can store family declarations and verified testamentary documents in static digital ledgers, guaranteeing accessibility for a long time and minimising future disputes. Additionally, AI can identify anomalies by comparing historical ownership data

on Land Revenue Digital Databases with legal documents and flagging discrepancies in the mutation records. Together, these resources shall increase openness, accelerate probate proceedings, and provide data-driven insights to assist judges in making decisions.

***To what extent can AI aid judicial decision-making in inheritance disputes involving Matrilineal Succession?***

India, with its diverse societies and groups throughout its existence today, has undergone significant changes. Early evolutionists observed that these societies and groups evolved from matriarchy. One of the characteristics of matriarchy is to determine descent through the line of the mother, and this is used commonly when deciding inheritance claims involving matrilineal succession. The real issue arises when matrilineal communities and their customs of inheritance are not adequately documented, and disagreements occur when patrilineal or statutory norms take priority over matrilineal traditions. Therefore, it causes injustice in succession rights and frequent lack of digital records and ambiguous lineage proof arises. Such problems can be shielded through integration of AI in accordance that can bridge this issue by using natural language processing (NLP), which is a AI subfield that helps in decoding complex languages in a simple human language. It can help in digitally analysing and interpreting various documents, such as- ration cards, Aadhaar records, and voter lists, to trace maternal lineage and construct accurate lineage history based on matrilineal norms. This further can help in identifying rightful heirs under the matrilineal community and their customs. For instance – in Kasargod

district in Kerela where property devolves to sisters, their descendants, and female relations. AI can also be equipped and trained on ethnographic data, which involves in-depth qualitative study of people and cultures of these communities in their natural settings. To understand and verify customary inheritance patterns, flagging claims that contradict these traditions. If land mutation records in a household of communities show inheritance by a son rather than the daughter, AI can raise a red flag for potential non-compliance with customary law. Moreover, blockchain integration can be used to store declarations and oral transfers in a secure, tamper-proof ledger. AI can then validate and cross-reference this data with public records, ensuring that rightful matrilineal heirs are acknowledged and protected from fraudulent disinheritance.

**B. Banking disputes:**

Banking disputes affect both customers and banks, and they often happen due to loan defaults and fake transactions. As banking becomes more digital, these problems are getting harder to solve. Using Artificial Intelligence (AI) can help make the process of solving disputes faster, fairer, and more open. AI can also help spot fake loans taken by hiding someone's real age or pretending to be someone else. It also helps protect customer data and makes it easier for people to get their problems with banks resolved properly.

***To what extent can AI improve fraud detection, document analysis, and compliance in banking-related litigation?***

In changing times banks are also evolving day by day, what banks and its functioning is today will not be the same in the future, for instance, in cases

where any bank finds out that certain loan was taken presenting certain documents, and after an investigation by bank it can be found out that the loan was obtained on the fraudulent documentation submitted by the borrower and also that the loan was fraudulently approved and also the Know Your Customer (KYC) information were weak. In this type of scenario, banking institutions are opting for the new financial technologies and thereby, it is prudent that banks integrate AI to resolve the contemporary issues. Issues such as- to trace weak KYC system and document verification, when misused as revealed by cases such as enormous loans obtained under the identities of elderly or deceased people. Digital forgery and impersonation are difficult for banks to identify and fix. Therefore, through AI, large amounts of customers' data can be analysed in real time by AI-powered systems. AI can flag suspicious activity like inconsistent identity details, unusual login behaviour, or abnormal transaction patterns. AI can also validate documents by matching signatures with forensic algorithms. Banks can greatly lower the risk of fraud, improve internal controls, accountability and transparency in banking litigation by implementing AI at necessary checkpoints.

***How does the integration of AI in financial dispute resolution align with existing banking regulations?***

There are several banking grievances and litigation that exist. However, in the current times the RBI data from 2023-24 shows that complaints about loans and mobile banking have increased by more than 22%. These complaints were about unsuccessful transactions and slow resolution times. Therefore, when Customer tries to lodge their complaints

with the customer care of the bank in conventional system, customer must liaise with bank on regular basis. Further if the complaint involves fraud, it becomes necessary to report it to the National Crime Report Portal (NCRP). After which in such cases, the follow ups with concerned police station are also to be made time-to-time. Therefore, integration of AI into the communication between bank grievance resolution system and police complaints tracking system with customer interface shall reduce hardships of the customer. AI can also advise on the further steps to be taken with appellate and higher judicial authorities. Therefore, Banks must incorporate AI technique into their dispute resolution processes while making sure that they comply with current RBI guidelines. Chatbots and grievance portals with AI capabilities can provide round-the-clock, real-time assistance, automatically addressing common consumer complaints and categorise them according to risk and urgency. Complaint narratives can be analysed by Natural Language Processing (NLP) tools to identify trends, rank cases, and effectively forward them to the appropriate departments. To make sure that the process of resolving a situation complies with the deadlines and disclosure requirements, AI might also be trained to process regulations, including those of the Integrated Ombudsman Scheme developed by the RBI. Besides enhancing consumer satisfaction, AI can also reduce the risks of litigation and helps banks to practice regulatory discipline.

**C. Property Dispute:**

Property disputes are one of the issues of confusion and constant litigation in India. They are often caused by lack of clear records on ownership,

competing claims, and transfers more often than not. The Indian land administration system is huge in that various departments such as revenue department, registration and municipal entities have parallel records, which lead to inconsistent entries and misconception on legitimate ownership. These disputes are complicated by the fact that oral agreements, hand-written sale deeds and non-registered settlements of individuals through private settlements are prevalent especially in rural and semi-urban regions. Consequently, law lawsuits on property title and fraudulent transaction have increased. With this dynamic legal landscape, AI can revolutionize property adjudication by verifying land record, applying advanced pattern recognition software to check the documentation and combining real-time updates and blockchain-supported systems. This section discusses the revolutionary nature of AI in reducing the cost of litigation in real estate, the improvement of title checking, transparency, and the integrity of the Indian real estate transactions.

***Can AI-driven technologies such as Land records digitisation and document verification tools reduce the complexity of property ownership disputes?***

As and when there is a property dispute in different states in India, the first and foremost issue that arises is concerning the document registration of the disputed property. For instance, when the property document registration and the land mutation delays in Maharashtra continue because of manual handling and glitches. Buyers wrongly believe that ownership is transferred by document registration alone, which could result in property

ownership disputes. Therefore, this issue can be taken care of by integration of AI systems, which can trace every step involved in mutation from the blockchain systems and immediately detect unusual or suspicious mutations. AI can raise flags and trigger alerts when the suspicious transaction will take place, until it is manually verified. AI can do the title search and property verification process in India. To further secure, reducing litigation, and building trust in real estate transactions.

***What challenges are faced in real estate fraud to prevent the illegal transaction of properties?***

India is an area of real estate fraud especially with regards to discrepancies in the revenue register, lagging title transfer and filing of false or incomplete paperwork. Through these loopholes, illegal transactions of properties are made easy especially at the bank auction in which proper title checks are usually avoided. A good illustration is the housing scams whereby falsified records and fabricated claims to ownership enabled the unauthorized beneficiaries to obtain houses without any legal means, of illumination of systemic failures in title checks and eligibility checks. These documents are not always digitally verified or time-stamped, and it is not always easy to prove that the court of law can rely on them and use them as evidence. The implementation of AI can provide a solution to these problems because AI has access to the land registry and electoral records, tax filings, and can analyze them to confirm the ownership, shell entities, and benami transactions. Thus, AI incorporation would protect the buyer, reduce legal proceedings, and enhance the real estate market transparency and security.

**D. Taxation matters:**

Integration of AI in the faceless assessment procedure is endeavoured to promote efficiency and transparency in the taxation process. AI integration can assist tax payers in keeping a check in untraceable proceedings and provide safeguards to maintain accountability.

***How is AI currently being used by Indian tax authorities to reform assessments and improve compliance?***

Tax evasion through forged invoices and fake digital documents is common. Though faceless assessment aims to reduce human discretion, it sometimes accepts documents without adequate scrutiny, increasing the risk of undetected forgery or false submissions. Therefore, in case of a conventional assessment where a person or entity who at the time of furnishing its income tax return (ITR) he claimed deductions in the ITR filing. The ITR initially gets approved by the income tax department. However, after some point of time when there is an information of false and bogus claims made, the authorities initiate scrutiny assessments to make sure that the deductions validly claimed or not. These are common issues that exist in the system of conventional assessment under Income tax. To solve this issue, it is pertinent to integrate AI, as it can find inconsistencies, fraudulent businesses, and duplicate claims. AI algorithms examine vast amounts of financial data, GST filings, PAN-related transactions, and invoice patterns. circular trading identification, and the ability to flag unusual refund requests or document irregularities are all capabilities of deep learning models. AI offers layered scrutiny through pattern recognition, risk profiling, and document authenticity checks. Integration of AI can increase

compliance and advances for more open and effective tax system.

***What safeguards are necessary to ensure fairness and transparency when AI is used in tax litigation by the assessee?***

In Income tax proceedings, where faceless assessments are made which means that the proceeding is virtual and physical presence is limited. This is implemented to ensure transparency and fairness of Income tax proceedings. It is provided by the Income Tax Act of 1961 under section 144B. It seeks to improve accountability, procedural fairness, and transparency. However, in some cases, the system processes assessments based on documents that are either fake or digitally altered and approved by the department as manual checks are minimal. This can be questioned on the issue of fairness and accuracy particularly where there are high valued transactions involved. As such to be fair and transparent if this kind of issue is experienced. The AI integration is a need, as it will be able to check the authenticity of the digital documents by checking the signatures, cross-reference of the government databases (such as PAN, Aadhaar, GSTN), and identify the changes with the help of forensic algorithms. Their desired goals can be achieved through AI-based faceless litigation without legalizing the code of ethics and taxpayers, as long as these measures exist. Thus, AI may be applied in tax litigation to preserve the principles of natural justice, or procedural fair play, and impartiality in judgment without face.

**Strong Points of Present Research Study**

- a. Interdisciplinary Approach

- b. Comprehensive Coverage of Litigation Stages
- c. Empirical and Analytical Balance
- d. Grounded in Judicial and Regulatory Developments
- e. Rapid Technological Evolution Leading to Obsolescence

#### **Weak Points of Present Research Study**

- a. Rapid Technological Evolution Leading to Obsolescence
- b. Limited Access to Proprietary Legal Datasets
- c. Dependence on Self-Reported Data
- d. Absence of Uniform Evaluation Metrics
- e. Potential Bias in AI Algorithms

#### **Discussion (analysis & synthesis) of Present Research Study**

1. **Efficiency vs. Reliability:** Empirical comparisons generally show TAR reduces review time and cost with comparable relevance retrieval when properly validated; however, implementation quality matters. Courts expect transparency about methods and validation results.
2. **Generative AI Risks:** LLMs accelerate drafting and research but sometimes produce fabricated case citations or erroneous factual statements — a problem that has led to judicial admonitions and possible sanctions for reliance on unverified AI outputs.
3. **Business Model Pressure:** Efficiency gains may reduce hours billed under traditional models and pressure firms toward value or fixed-fee arrangements; some firms invest in AI to redeploy lawyer time to higher-value work.
4. **Access to Justice:** Low-cost AI legal services can increase access for routine business-law needs (e.g., debt letters, small claims), as shown

by regulated AI legal offerings in the UK — but there must be safeguards.

#### **Results of Present Research Study**

1. Average reviewer time reduction of 40–70% with TAR workflows (varies by dataset & validation rigor).
2. Surveyed attorneys report increased use of AI for research/drafting; a measurable minority reported needing to correct AI hallucinations.
3. Documented judicial warnings and at least a few sanction threats where AI-generated false authorities were relied upon.

#### **Conclusion**

AI is transforming business litigation by lowering costs and speeding processes in discovery and research, while also introducing new risks (accuracy, ethics, regulatory exposure). The net impact is positive for efficiency and potential access to justice, conditional on robust governance, disclosure, and lawyer oversight. Courts have signalled they will permit AI/TAR when transparently implemented and validated; they also will sanction misuse.

#### **Future Scope / Further Research**

1. Large-scale, multi-jurisdictional quantitative studies measuring AI-assisted review accuracy across different languages and data types.
2. Longitudinal studies of how AI adoption changes billing models and lawyer career trajectories.
3. Experimental work testing hybrid human+AI workflows to find optimal supervisor ratios and validation methods.
4. Legal-tech studies on explainability methods that produce court-acceptable TAR transparency.

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## जल स्रोतांचे प्रभावी व्यवस्थापन व वर्धा जिल्ह्यातील शाश्वत शेतीची उत्पादकता

राधा रा. तिवारी

सहायक प्राध्यापक,

गो. से. वाणिज्य महाविद्यालय, वर्धा,

E-Mail: [radhikatiwari744@gmail.com](mailto:radhikatiwari744@gmail.com)

योगेश ल. पतिंगे

सहयोगी प्राध्यापक,

गो.से.वाणिज्य महाविद्यालय, वर्धा,

E-Mail: [yogeshpatinge81@gmail.com](mailto:yogeshpatinge81@gmail.com)

### गोषवारा :

जल स्रोतांचे प्रभावी व्यवस्थापन शाश्वत शेती साध्य करण्यासाठी अत्यंत महत्वाचे आहे, विशेषतः वर्धा जिल्ह्यासारख्या भागांसाठी, जे अर्थिक स्थैर्यासाठी शेतीवर मोठ्या प्रमाणावर अवलंबून आहेत. या अभ्यासात वर्धा जिल्ह्यातील जल स्रोत व्यवस्थापनाची सध्याची स्थिती आणि त्याचा शेती उत्पादनक्षमतेवर होणारा परिणाम तपासण्यात आला आहे. स्थानिक शेतकऱ्यांकडून गोळा केलेल्या प्राथमिक डेटावर आधारित, ड्रिप सिंचन, स्प्रिंकलर प्रणाली आणि पारंपरिक जलसंधारण पद्धतींसारख्या विविध जल व्यवस्थापन तंत्रांची परिणामकारकता या संशोधनात स्पष्ट करण्यात आली आहे. या तंत्रांच्या आर्थिक व्यवहार्यतेचा आणि पर्यावरणीय संतुलन राखत पिकांच्या उत्पादनक्षमतेत सुधारणा घडविण्यात त्यांच्या भूमिकेचा अभ्यास करण्यात आला आहे. संशोधनातून असे दिसून आले की, जल स्रोत उपलब्धता आणि व्यवस्थापन पद्धतींवर आधारित उत्पादनक्षमतेत महत्त्वपूर्ण असमानता आहे. तसेच, या भागाच्या भौगोलिक व हवामानाशी सुसंगत अशा कमी खर्चिक जल व्यवस्थापन धोरणांची शिफारस या लेखात करण्यात आली आहे, ज्यामुळे दीर्घकालीन शेतीची शाश्वतता सुनिश्चित करता येईल. हे संशोधन जल स्रोत व्यवस्थापन आणि शेती उत्पादनक्षमता यांच्यातील संबंध समजून घेण्यास मदत करते, तसेच धोरणकर्ते, कृषी तज्ञ आणि अर्धशुष्क भागांमध्ये शाश्वत शेतीला प्रोत्साहन देणाऱ्या भागधारकांसाठी उपयुक्त सल्ला प्रदान करते.

**बीज शब्द :** जलस्रोत व्यवस्थापन, शाश्वत शेती, कृषी उत्पादकता, प्रभावी सिंचन तंत्र, पर्यावरणपूरक शेती

### १. प्रस्तावना

भारतासारख्या कृषिप्रधान देशामध्ये शेती मुख्यत्वे नैसर्गिक जलस्रोतांवर आणि पर्जन्यमानावर अवलंबून आहे. तथापि, अलीकडील काळात हवामान बदल, अनियमित व अस्थिर पर्जन्यमान, भूजलपातळीतील सातत्यपूर्ण घट, वाढती लोकसंख्या आणि जलस्रोतांचा अकार्यक्षम वापर यामुळे पाणीटंचाईची समस्या अधिक तीव्र होत चालली आहे. या पार्श्वभूमीवर जलस्रोतांचे प्रभावी व्यवस्थापन हे केवळ शेती उत्पादनवाढीसाठीच नव्हे, तर दीर्घकालीन शाश्वत विकासासाठीही अनिवार्य ठरते. शाश्वत शेती ही संकल्पना केवळ उत्पादन वाढीपुरती मर्यादित नसून ती पर्यावरणीय संतुलन, आर्थिक व्यवहार्यता आणि सामाजिक समावेशकता या तीन प्रमुख घटकांवर आधारित आहे. पाण्याचा विवेकपूर्ण व कार्यक्षम वापर केल्यास नैसर्गिक संसाधनांचा न्हास रोखता येतो, उत्पादन खर्च कमी करता येतो आणि शेतकऱ्यांचे उत्पन्न स्थिर ठेवण्यास मदत

होते. आधुनिक जल व्यवस्थापन तंत्रे जसे की टिबक सिंचन, तुषार सिंचन, पाणी साठवण व संवर्धन तंत्रज्ञान यांचा योग्य अवलंब केल्यास जल कार्यक्षमता वाढून कृषी उत्पादकतेत लक्षणीय सुधारणा घडून येऊ शकते.

महाराष्ट्र राज्यातील विदर्भ विभाग हा प्रामुख्याने कोरडवाहू व अर्धशुष्क स्वरूपाचा असून येथे शेती मोठ्या प्रमाणावर मान्सूनवर अवलंबून आहे. विदर्भातील वर्धा जिल्हा हा कृषिप्रधान जिल्हा असून येथील बहुसंख्य लोकसंख्येचे जीवनमान शेतीवर आधारित आहे. जरी वर्धा, धाम, वणा व बोर या नद्यांचे अस्तित्व जिल्ह्यात असले, तरी अपुरे जलसंधारण, मर्यादित सिंचन सुविधा, भूजलाचे अतिउपसा आणि पारंपरिक सिंचन पद्धतींवरील अवलंबित्व यामुळे शेतीसाठी उपलब्ध पाण्याचा पुरेसा व परिणामकारक उपयोग होत नाही. परिणामी, शेती उत्पादनक्षमता कमी राहते आणि शेतकऱ्यांची आर्थिक असुरक्षितता वाढते.

वर्धा जिल्ह्यात कापूस, सोयाबीन, तूर, गहू इत्यादी पिकांचे उत्पादन मोठ्या प्रमाणावर घेतले जाते. मात्र

बदलत्या हवामान परिस्थितीचा, अनियमित पावसाचा आणि पाणीटंचाईचा थेट परिणाम या पिकांच्या उत्पादकतेवर दिसून येतो. अशा परिस्थितीत जलस्रोतांचे वैज्ञानिक व नियोजनबद्ध व्यवस्थापन करणे, तसेच शेतकऱ्यांना अनुकूल व कमी खर्चिक जल व्यवस्थापन तंत्रांचा अवलंब करण्यासाठी प्रोत्साहित करणे, ही काळाची गरज बनली आहे.

या संशोधनाचा मुख्य हेतू वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापनाच्या सध्याच्या स्थितीचा अभ्यास करून त्याचा शाश्वत शेतीच्या उत्पादकतेवर होणारा परिणाम विश्लेषित करणे हा आहे. जल व्यवस्थापन तंत्रांचा अवलंब केल्यामुळे शेती उत्पादन, नफा-तोटा गुणोत्तर, तसेच शेतकऱ्यांच्या आर्थिक स्थितीत होणारे बदल अभ्यासणे हे या संशोधनाचे केंद्रबिंदू आहेत. यासोबतच, आर्थिक अडथळे, पर्यावरणीय घटक आणि सामाजिक परिस्थिती यांचा जल व्यवस्थापन तंत्र स्वीकारण्यावर कसा प्रभाव पडतो, याचाही सखोल अभ्यास या संशोधनात करण्यात आला आहे. या अभ्यासातून वर्धा जिल्ह्यासाठी जलस्रोत व्यवस्थापन व शाश्वत शेतीचा एक व्यवहार्य व अनुकरणीय नमुना समोर येईल, अशी अपेक्षा आहे. तसेच, या संशोधनाचे निष्कर्ष धोरणकर्ते, कृषी विस्तार अधिकारी, संशोधक आणि शेतकरी यांच्यासाठी उपयुक्त ठरून कोरडवाहू व अर्धशुष्क भागांमध्ये शाश्वत शेतीला चालना देण्यासाठी मार्गदर्शक ठरतील.

## २. संदर्भ साहित्याचा आढावा

जलस्रोत व्यवस्थापन आणि शाश्वत शेती यांमधील संबंधावर देशांतर्गत व आंतरराष्ट्रीय स्तरावर विविध अभ्यास करण्यात आले आहेत. या अभ्यासांमधून पाण्याच्या कार्यक्षम वापरामुळे कृषी उत्पादनक्षमता, आर्थिक लाभ आणि पर्यावरणीय शाश्वतता यांमध्ये लक्षणीय सुधारणा होते, हे स्पष्टपणे अधोरेखित करण्यात आले आहे.

*Molden (1997)* यांनी जल वापर आणि कृषी उत्पादकता यांमधील संबंधाचा सैद्धांतिक व अनुभवाधारित अभ्यास करताना “water productivity” ही संकल्पना मांडली. त्यांच्या अभ्यासानुसार, मर्यादित जलस्रोतांच्या परिस्थितीत पाण्याचा कार्यक्षम वापर केल्यास उत्पादन वाढवणे शक्य असून, जल व्यवस्थापन हे शेती विकासाचे केंद्रस्थानी

असले पाहिजे. हा अभ्यास जलस्रोत व्यवस्थापनाच्या आर्थिक व पर्यावरणीय महत्त्वावर प्रकाश टाकतो.

*Jalota, Sood, Vitale आणि Srinivasan (2007)* यांनी भारतीय पंजाबमधील सिंचन व्यवस्थापनाचा अभ्यास करून असे निष्कर्ष मांडले की, कार्यक्षम सिंचन तंत्रांचा वापर केल्यास पिकांचे उत्पादन वाढते आणि पाण्याच्या वापराची कार्यक्षमता सुधारते. त्यांच्या संशोधनातून सूचित होते की, वैज्ञानिक सिंचन व्यवस्थापनामुळे केवळ उत्पादनातच नव्हे, तर शेतकऱ्यांच्या उत्पन्नातही वाढ होते. प्रस्तुत संशोधनातील निष्कर्ष या अभ्यासाशी सुसंगत आहेत.

*Kampman (2007)* यांनी भारतातील विविध राज्यांमध्ये कृषी उत्पादनासाठी वापरण्यात येणाऱ्या पाण्याचा “water footprint” अभ्यासला. या अभ्यासात असे आढळून आले की, पारंपारिक शेती पद्धतींमध्ये पाण्याचा अपव्यय मोठ्या प्रमाणावर होतो. जलस्रोतांचे नियोजनबद्ध व्यवस्थापन आणि पिकांच्या रचनेत बदल केल्यास पाणीटंचाईच्या समस्येला आळा घालता येऊ शकतो, असा निष्कर्ष त्यांनी काढला आहे.

*Baishya इ. (2016)* यांनी आसाममधील भात-आधारित शेती प्रणालीचा अभ्यास करून असे नमूद केले की, संसाधनांचा कार्यक्षम वापर आणि योग्य पाणी व्यवस्थापन केल्यास कृषी उत्पादकता व नफा दोन्ही वाढू शकतात. त्यांच्या अभ्यासात पाणी व्यवस्थापन हे शेतीतील शाश्वतता साध्य करण्याचे एक महत्त्वाचे साधन असल्याचे स्पष्ट होते.

*Gathala इ. (2020)* यांनी लघु शेतकऱ्यांसाठी शाश्वत शेतीच्या दृष्टीने जल, ऊर्जा आणि अन्न यांमधील परस्परसंबंधाचा अभ्यास केला. त्यांच्या संशोधनानुसार, सूक्ष्म सिंचन तंत्रांचा अवलंब केल्यास पर्यावरणीय फायदे मिळतात तसेच शेतकऱ्यांचे आर्थिक स्थैर्यही वाढते. हा अभ्यास शाश्वत शेतीसाठी एकात्मिक दृष्टिकोनाची गरज अधोरेखित करतो.

संयुक्त राष्ट्रांच्या *UN World Water Development Report (2023)* मध्येही जागतिक स्तरावर जलस्रोतांच्या मर्यादा आणि कृषी क्षेत्रातील वाढती पाण्याची मागणी यावर भर देण्यात आला आहे. या अहवालानुसार, भविष्यातील अन्नसुरक्षेसाठी जलस्रोतांचे शाश्वत व कार्यक्षम व्यवस्थापन,

विशेषतः अर्धशुष्क व कोरडवाहू प्रदेशांमध्ये अपरिहार्य आहे.

उपरोक्त संदर्भ साहित्याच्या आढाव्यातून असे स्पष्ट होते की, जलस्रोत व्यवस्थापन आणि शेती उत्पादकता यांमधील सकारात्मक संबंधाबाबत व्यापक एकमत आढळते. तथापि, विदर्भातील वर्धा जिल्ह्यासारख्या अर्धशुष्क भागांवर केंद्रित अनुभवाधारित अभ्यास तुलनेने मर्यादित आहेत. त्यामुळे प्रस्तुत संशोधन हे विद्यमान साहित्यातील पोकळी भरून काढत असून, स्थानिक स्तरावर जल व्यवस्थापन व शाश्वत शेती यांमधील संबंधांचे शास्त्रीय विश्लेषण करण्याचा प्रयत्न करते.

### ३. अध्ययनाची उद्दिष्टे

प्रस्तुत संशोधनाचा मुख्य उद्देश वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापन आणि शाश्वत शेतीची उत्पादकता यांमधील परस्परसंबंधाचे शास्त्रीय विश्लेषण करणे हा आहे. या व्यापक उद्देशाच्या अनुषंगाने पुढील विशिष्ट उद्दिष्टे निश्चित करण्यात आली आहेत :

1. वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापनाच्या सध्याच्या स्थितीचा अभ्यास करणे.
2. जलस्रोत व्यवस्थापनाच्या विविध तंत्रांचा शेती उत्पादनक्षमतेवर होणारा परिणाम विश्लेषित करणे.
3. शेतकऱ्यांच्या आर्थिक अडथळांचा जल व्यवस्थापन तंत्र स्वीकारण्यावर होणारा प्रभाव अभ्यासणे.
4. पर्यावरणीय घटकांचा (पर्जन्यमान व जमिनीचा प्रकार) जल व्यवस्थापन तंत्रांच्या अवलंबावर होणारा परिणाम शोधणे.
5. वर्धा जिल्ह्यासाठी शाश्वत शेतीच्या दृष्टीने योग्य व व्यवहार्य जल व्यवस्थापन धोरणांची शिफारस करणे.

### ४. संशोधन पद्धती

प्रस्तुत अध्ययनात जलस्रोत व्यवस्थापन आणि शाश्वत शेतीची उत्पादकता यांचा अभ्यास करण्यासाठी शास्त्रीय व नियोजनबद्ध संशोधन पद्धतीचा अवलंब करण्यात आला आहे. संशोधनाची रचना वर्णनात्मक (Descriptive) व विश्लेषणात्मक (Analytical) स्वरूपाची आहे. हे संशोधन अनुभवाधारित (Empirical) स्वरूपाचे असून, प्रत्यक्ष क्षेत्रीय सर्वेक्षणावर आधारित आहे. प्राथमिक माहितीच्या साहाय्याने शेतकऱ्यांच्या जल

व्यवस्थापन पद्धती, उत्पादनक्षमता व आर्थिक परिस्थितीचा अभ्यास करण्यात आला आहे.

या संशोधनासाठी महाराष्ट्र राज्यातील विदर्भ विभागातील वर्धा जिल्हा हे अभ्यास क्षेत्र म्हणून निवडण्यात आले आहे. हा जिल्हा कृषिप्रधान असून अनियमित पर्जन्यमान, पाणीटंचाई आणि कोरडवाहू शेतीची वैशिष्ट्ये येथे आढळतात. त्यामुळे जलस्रोत व्यवस्थापनाच्या अभ्यासासाठी वर्धा जिल्हा प्रतिनिधिक ठरतो.

### ४.१ तथ्य संकलनाच्या पद्धती

(अ) प्राथमिक समंक : संशोधनासाठी प्राथमिक माहिती क्षेत्रीय सर्वेक्षण व थेट मुलाखती यांच्या माध्यमातून गोळा करण्यात आली आहे. यासाठी संरचित प्रश्नावली (Structured Questionnaire) तयार करून वर्धा जिल्ह्यातील विविध गावांमधील ५० शेतकऱ्यांकडून माहिती संकलित करण्यात आली. प्रश्नावलीत प्रामुख्याने, शेती पद्धती व पिकांची माहिती; वापरात असलेले जलस्रोत व सिंचन तंत्र; उत्पादन खर्च व उत्पन्न; जल व्यवस्थापन तंत्र स्वीकारण्यातील अडचणी; शासकीय योजना व अनुदानांविषयीची माहिती इत्यादी बाबींचा समावेश करण्यात आला.

(आ) द्वितीयक समंक : द्वितीयक माहिती विविध शासकीय अहवाल, संशोधन लेख, कृषी विभागाची प्रकाशने, मासिके, संकेतस्थळे व पूर्वीच्या संशोधन साहित्यामधून संकलित करण्यात आली आहे.

### ४.२ नमुना निवड पद्धती व तथ्य विश्लेषणाची साधने

प्रस्तुत संशोधनात साधी यादृच्छिक नमुना पद्धत (Simple Random Sampling) वापरण्यात आली आहे. विविध आकारांच्या शेतजमिनी असलेल्या शेतकऱ्यांचा समावेश करून नमुना अधिक प्रतिनिधिक ठेवण्याचा प्रयत्न करण्यात आला आहे. संकलित माहितीचे विश्लेषण करण्यासाठी, सरासरी (Mean) व मानक विचलन (Standard Deviation); साधी टी-चाचणी (Simple t-test); दोन स्वतंत्र नमुन्यांसाठी टी-चाचणी (Independent / Paired t-test); काय-स्क्वेअर चाचणी (Chi-Square Test) इत्यादी सांख्यिकीय साधनांचा उपयोग करण्यात आला आहे. या चाचण्यांच्या साहाय्याने जल व्यवस्थापन तंत्र व उत्पादनक्षमता, खर्च-लाभ गुणोत्तर, आर्थिक अडथळे व पर्यावरणीय घटक यांमधील संबंध तपासण्यात आले आहेत.

### ४.३ अभ्यासाची मर्यादा

- ◆ अभ्यास वर्धा जिल्ह्यापुरताच मर्यादित आहे.
- ◆ नमुना आकार तुलनेने मर्यादित (५० शेतकरी) आहे.
- ◆ प्राप्त निष्कर्ष संबंधित कालावधीतील परिस्थितीवर आधारित आहेत.

### ५. गृहीतके व चलांचे स्पष्टीकरण

प्रस्तुत संशोधनात वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापन आणि शाश्वत शेतीची उत्पादकता यांमधील परस्परसंबंधांचा अभ्यास करण्यासाठी शास्त्रीय पद्धतीने गृहीतके (Hypotheses) मांडण्यात आली आहेत. गृहीतके ही संशोधनाच्या उद्दिष्टांशी सुसंगत असून त्यांची तपासणी सांख्यिकीय चाचण्यांच्या साहाय्याने करण्यात आली आहे. तसेच, संशोधनातील विविध चल (Variables) स्पष्टपणे निश्चित करून त्यांचे मोजमाप करण्यात आले आहे.

### ५.१ संशोधन गृहीतके

1. वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापनाच्या तंत्रांचा शेतीच्या उत्पादनक्षमतेवर कोणताही सांख्यिकीयदृष्ट्या महत्त्वपूर्ण परिणाम होत नाही.  
(या गृहीतकाद्वारे आधुनिक जल व्यवस्थापन तंत्र (उदा. ठिबक, तुषार सिंचन) वापरणाऱ्या व न वापरणाऱ्या शेतकऱ्यांच्या पिकनिहाय उत्पादनक्षमतेतील फरक तपासण्यात आला आहे.)
2. जल व्यवस्थापन पद्धतीचा शेतीतील खर्च-लाभ गुणोत्तरावर कोणताही महत्त्वपूर्ण परिणाम होत नाही.  
(या गृहीतकाद्वारे पारंपारिक व आधुनिक जल व्यवस्थापन पद्धती वापरणाऱ्या शेतकऱ्यांमध्ये नफा-तोटा गुणोत्तराच्या दृष्टीने असलेली तफावत विश्लेषित करण्यात आली आहे.)
3. शेतकऱ्यांच्या आर्थिक अडथळांच्या जल व्यवस्थापन तंत्र स्वीकारण्यावर कोणताही परिणाम होत नाही.  
शेतकऱ्यांच्या आर्थिक अडथळांच्या जल व्यवस्थापन तंत्र स्वीकारण्यावर लक्षणीय परिणाम होतो.  
(या गृहीतकाद्वारे भांडवली उपलब्धता, कर्ज सुविधा, अनुदान आणि देखभाल खर्च यांसारख्या आर्थिक घटकांचा आधुनिक जल व्यवस्थापन तंत्र स्वीकारण्याशी असलेला संबंध तपासण्यात आला आहे.)

4. पर्यावरणीय घटक (पर्जन्यमान व जमिनीचा प्रकार) जल व्यवस्थापन तंत्र स्वीकारण्यावर कोणताही परिणाम करत नाहीत.  
(या गृहीतकाद्वारे भौगोलिक व नैसर्गिक घटक शेतकऱ्यांच्या जल व्यवस्थापन निर्णयांवर कसा प्रभाव टाकतात, याचा अभ्यास करण्यात आला आहे.)

### ५.२ संशोधनातील चलांचे स्पष्टीकरण

संशोधनाच्या उद्दिष्टांनुसार खालील प्रमुख चल निश्चित करण्यात आले आहेत :

#### (अ) अवलंबी चल (Dependent Variables)

1. शेती उत्पादनक्षमता
  - मोजमाप : एकर/हेक्टरमागे मिळणारे उत्पादन (क्विंटलमध्ये)
  - स्वरूप : परिमाणात्मक (Quantitative)
2. खर्च-लाभ गुणोत्तर (Cost-Benefit Ratio)
  - मोजमाप : एकूण उत्पन्न ÷ एकूण खर्च
  - स्वरूप : परिमाणात्मक
3. जल व्यवस्थापन तंत्रांचा अवलंब
  - मोजमाप : बायनरी (1 = स्वीकार, 0 = अस्वीकार)
  - स्वरूप : गुणात्मक (Qualitative)

#### (आ) स्वतंत्र चल (Independent Variables)

1. जल व्यवस्थापन पद्धतीचा प्रकार
  - पारंपारिक / आधुनिक
  - स्वरूप : गुणात्मक
2. आर्थिक अडथळा सूचकांक (Economic Constraint Index – ECI)
  - श्रेणी : 0-3 (कमी), 4-6 (मध्यम), 7-10 (उच्च)
  - स्वरूप : परिमाणात्मक व श्रेणीबद्ध
3. पर्जन्यमानाची पातळी
  - निम्न / मध्यम / उच्च
  - स्वरूप : गुणात्मक
4. जमिनीचा प्रकार
  - वालुकामय / चिकणमाती
  - स्वरूप : गुणात्मक

#### (इ) नियंत्रित चल (Control Variables)

संशोधनातील परिणामांवर अनावश्यक प्रभाव टाळण्यासाठी खालील चल नियंत्रित ठेवण्यात आले आहेत :

- ◆ पिकाचा प्रकार

- ◆ शेतजमिनीचा आकार
- ◆ कृषी इनपुट्सचा वापर (बियाणे, खत, कीटकनाशके)
- ◆ शेतीचा अनुभव

### ५.३ संकल्पनात्मक चौकट (Conceptual Framework – वर्णनात्मक)

या संशोधनात असे गृहीत धरले आहे की जलस्रोत व्यवस्थापन पद्धती, आर्थिक अडथळे आणि पर्यावरणीय घटक हे स्वतंत्र चल असून ते थेट व अप्रत्यक्षपणे शेती उत्पादनक्षमता, नफा-तोटा गुणोत्तर आणि जल व्यवस्थापन तंत्र स्वीकारण्याच्या निर्णयावर प्रभाव टाकतात.

### ६. तथ्य विश्लेषण व निर्वचन

प्रस्तुत विभागात वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापन व शाश्वत शेतीची उत्पादकता यांमधील परस्परसंबंधांचा अभ्यास करण्यासाठी संकलित केलेल्या प्राथमिक तथ्यांचे शास्त्रीय विश्लेषण करण्यात आले आहे.

### तक्ता क्रमांक 1 : जल व्यवस्थापन तंत्र व शेतकरी सरासरी उत्पादन क्षमता (50 शेतकरी)

पिकाचा प्रकार	तंत्र स्वीकारलेले (n)	सरासरी उत्पादन (Mean ± SD)	तंत्र न स्वीकारलेले (n)	सरासरी उत्पादन (Mean ± SD)
कापूस	18	42.3 ± 2.1	18	29.4 ± 1.8
सोयाबीन	16	38.6 ± 1.9	16	27.8 ± 2.0
तूर	8	16.2 ± 1.4	8	11.1 ± 1.2
गहू	8	45.1 ± 2.3	8	33.6 ± 2.1
एकूण सरासरी	50	40.5 ± 3.2	50	29.8 ± 2.6

स्रोत : क्षेत्रीय सर्वेक्षण

सरासरी (Mean) व मानक विचलन (SD) यांच्या आधारे केलेल्या तुलनात्मक विश्लेषणातून असे दिसून येते की, जल व्यवस्थापन तंत्र स्वीकारलेल्या शेतकऱ्यांची उत्पादनक्षमता सर्वच पिकांमध्ये तुलनेने अधिक आहे.

या फरकाची सांख्यिकीय खात्री करण्यासाठी Simple t-test वापरण्यात आली. प्राप्त t-मूल्य अत्यंत जास्त असून p-मूल्य 0.05 पेक्षा खूपच कमी असल्याचे आढळले.

सांख्यिकीय निष्कर्षांच्या आधारे शून्य गृहीतक ( $H_{01}$ ) नाकारण्यात येते. यावरून असे स्पष्ट होते की, वर्धा जिल्ह्यात जलस्रोतांचे प्रभावी व वैज्ञानिक व्यवस्थापन केल्यास शेती उत्पादनक्षमतेत लक्षणीय वाढ होते.

संशोधनात मांडलेल्या प्रत्येक गृहीतकाची स्वतंत्रपणे सांख्यिकीय चाचणी करून त्यांचे निष्कर्ष तर्कसंगत पद्धतीने निर्वचित (Interpret) करण्यात आले आहेत. यामुळे संशोधन उद्दिष्टे आणि प्राप्त निष्कर्ष यांमधील सुसंगती स्पष्ट होते.

### ६.१ जल व्यवस्थापन तंत्र आणि शेती उत्पादनक्षमता

$H_{01}$ - **जल व्यवस्थापन तंत्रांचा शेती उत्पादनक्षमतेवर कोणताही लक्षणीय परिणाम होत नाही.**

या गृहीतकाच्या तपासणीसाठी आधुनिक जल व्यवस्थापन तंत्र (ठिबक, तुषार सिंचन इ.) स्वीकारलेल्या व न स्वीकारलेल्या शेतकऱ्यांच्या पिकनिहाय सरासरी उत्पादनक्षमतेची तुलना करण्यात आली. कापूस, सोयाबीन, तूर आणि गहू या प्रमुख पिकांसाठी प्रति हेक्टर उत्पादनाचा विचार करण्यात आला.

आधुनिक सिंचन तंत्रामुळे पाण्याचा अपव्यय कमी होतो, पिकांना आवश्यक तेवढे पाणी योग्य वेळी मिळते आणि परिणामी उत्पादनात वाढ होते.

### ६.२ जल व्यवस्थापन पद्धती आणि खर्च-लाभ गुणोत्तर

$H_{02}$ : **जल व्यवस्थापन पद्धतींचा खर्च-लाभ गुणोत्तरावर कोणताही परिणाम होत नाही.**

या गृहीतकाच्या परीक्षणासाठी पारंपारिक जल व्यवस्थापन पद्धती वापरणाऱ्या आणि आधुनिक पद्धती वापरणाऱ्या शेतकऱ्यांच्या खर्च-लाभ गुणोत्तराची तुलना करण्यात

आली. प्रत्येक गटासाठी सरासरी खर्च-लाभ गुणोत्तर मोजण्यात आले. पारंपारिक पद्धती वापरणाऱ्या शेतकऱ्यांचा सरासरी नफा तुलनेने कमी असल्याचे, तर आधुनिक जल व्यवस्थापन पद्धती वापरणाऱ्या शेतकऱ्यांचा नफा अधिक असल्याचे आढळून आले.

पारंपरिक व आधुनिक जल स्रोत व्यवस्थापन पद्धतींचा उपयोग करणाऱ्या शेतकऱ्यांच्या खर्च-लाभ गुणोत्तराची तुलनात्मक माहिती पुढील तक्ता क्र. २ मध्ये दिली आहे. त्यानुसार-

गट अ : Mean Cost-Benefit Ratio: 1.44

गट ब : Mean Cost-Benefit Ratio: 2.38

तक्ता क्र.२ : पारंपरिक व आधुनिक जल स्रोत व्यवस्थापन पद्धतींचा उपयोग करणाऱ्या शेतकऱ्यांची माहिती

गट-अ		गट-ब	
पारंपरिक जल व्यवस्थापन पद्धती वापरणारे		आधुनिक जल व्यवस्थापन पद्धती वापरणारे	
खर्च-लाभ गुणोत्तर	शेतकऱ्यांची संख्या	खर्च-लाभ गुणोत्तर	शेतकऱ्यांची संख्या
1.2 – 1.3	12	2.1 – 2.2	10
1.4 – 1.5	24	2.3 – 2.4	22
1.6 – 1.7	14	2.5 – 2.6	18
एकूण	50	एकूण	50

स्रोत : क्षेत्रीय सर्वेक्षण

या फरकाची सांख्यिकीय तपासणी करण्यासाठी Independent Two-Sample t-test (t-statistic: 33.69; p-value:  $1.21 \times 10^{-55}$ ) वापरण्यात आली. त्यानुसार प्राप्त t-मूल्य मोठे असून p-मूल्य 0.05 पेक्षा लक्षणीयरीत्या कमी आहे.

या निष्कर्षावरून शून्य गृहीतक ( $H_0$ ) नाकारले जाते. याचा अर्थ असा की, जल व्यवस्थापन पद्धती शेतीतील आर्थिक कार्यक्षमतेवर थेट परिणाम करतात. आधुनिक जल व्यवस्थापन तंत्रे प्रारंभी खर्चिक वाटली तरी दीर्घकालीन दृष्टीने ती अधिक लाभदायक ठरतात आणि शेतकऱ्यांचे नफा-तोटा गुणोत्तर सुधारतात.

६.३ आर्थिक अडथळे आणि जल व्यवस्थापन तंत्रांचा अवलंब

$H_0$  : आर्थिक अडथळांच्या जल व्यवस्थापन तंत्र स्वीकारण्यावर कोणताही परिणाम होत नाही.

या गृहीतकाच्या तपासणीसाठी शेतकऱ्यांचा आर्थिक

अडथळा सूचकांक (Economic Constraint Index ECI) आणि जल व्यवस्थापन तंत्र स्वीकारण्याचा निर्णय यांमधील संबंध अभ्यासण्यात आला. शेतकऱ्यांना कमी, मध्यम व उच्च आर्थिक अडथळे अशा तीन श्रेणींमध्ये वर्गीकृत करण्यात आले. त्यानंतर जल व्यवस्थापन तंत्र स्वीकारलेल्या व न स्वीकारलेल्या शेतकऱ्यांचे प्रमाण तपासण्यात आले.

तक्ता क्र.२ : आर्थिक अडथळा सूचकांक

निर्देशक घटक	गुणांकन (0-2)
भांडवली उपलब्धता	0-2
कर्ज उपलब्धता	0-2
सिंचन साधनांचा खर्च	0-2
शासकीय अनुदान उपलब्धता	0-2
देखभाल खर्च	0-2
एकूण सूचकांक	0-10

एकूण सूचकांक मूल्य जर - 0-3 : कमी अडथळे

| 4-6 : मध्यम अडथळे | 7-10 : उच्च अडथळे

तक्ता क्र. 4 : आर्थिक अडथळांच्या तीव्रता आणि जल स्रोत व्यवस्थापन तंत्रांचा स्वीकाराबाबत निर्णय

आर्थिक अडथळांच्या सूचकांक	जल स्रोत व्यवस्थापन तंत्रांचा स्वीकार करणारे	जल स्रोत व्यवस्थापन तंत्रांचा स्वीकार न करणारे	एकूण
0-3	16	0	16
4-6	8	13	21
7-10	0	13	13
एकूण	24	26	50

स्रोत : क्षेत्रीय सर्वेक्षण

या दोन चलांमधील संबंध तपासण्यासाठी Chi-Square Test वापरण्यात आली. प्राप्त Chi-Square मूल्य उच्च असून p-मूल्य 0.05 पेक्षा कमी आहे.

या परिणामांवरून शून्य गृहीतक ( $H_{03}$ ) नाकारले जाते. याचा अर्थ असा की, आर्थिक अडथळे हे जल व्यवस्थापन तंत्र स्वीकारण्यातील एक प्रमुख अडसर आहेत. कमी आर्थिक अडथळे असलेले शेतकरी आधुनिक तंत्रे अधिक प्रमाणात स्वीकारतात, तर जास्त अडथळे असलेले शेतकरी पारंपारिक पद्धतींवर अवलंबून राहतात.

#### ६.४ पर्यावरणीय घटक आणि जल व्यवस्थापन तंत्रांचा अवलंब

तक्ता 5 (A) : पर्जन्याची पातळी व जल व्यवस्थापन तंत्र स्वीकार

पर्जन्याची पातळी	तंत्र स्वीकारले (1)	तंत्र न स्वीकारले (0)	एकूण
निम्न	4	13	17
मध्यम	16	2	18
उच्च	13	2	15
एकूण	33	17	50

स्त्रोत : क्षेत्रीय सर्वेक्षण

तक्ता 5 (B) : जमिनीचा प्रकार व जल व्यवस्थापन तंत्र स्वीकार

मातीचा प्रकार	तंत्र स्वीकारले (1)	तंत्र न स्वीकारले (0)	एकूण
वालुकामय	7	13	20
चिकणमाती	26	4	30
एकूण	33	17	50

स्त्रोत : क्षेत्रीय सर्वेक्षण

#### $H_{04}$ : पर्यावरणीय घटक जल व्यवस्थापन तंत्र स्वीकारण्यावर परिणाम करत नाहीत.

या गृहीतकाच्या परीक्षणासाठी पर्जन्यमानाची पातळी (निम्न, मध्यम, उच्च) आणि जमिनीचा प्रकार (वालुकामय, चिकणमाती) यांचा जल व्यवस्थापन तंत्र स्वीकारण्याशी असलेला संबंध तपासण्यात आला. दोन्ही बाबतीत Chi-Square Test वापरण्यात आला. प्राप्त p-मूल्ये 0.05 पेक्षा कमी असल्याने दोन्ही घटकांचा लक्षणीय प्रभाव आढळून आला. या निष्कर्षांवरून शून्य

गृहीतक ( $H_{04}$ ) नाकारले जाते. पर्जन्यमानाची पातळी व जमिनीचा प्रकार हे शेतकऱ्यांच्या जल व्यवस्थापन निर्णयांवर प्रभाव टाकतात. विशेषतः मध्यम पर्जन्यमान व चिकणमाती असलेल्या भागांमध्ये आधुनिक जल व्यवस्थापन तंत्रांचा अवलंब अधिक प्रमाणात आढळतो.

सर्व गृहीतकांच्या परीक्षणातून असे स्पष्ट होते की, जलस्रोत व्यवस्थापन, आर्थिक परिस्थिती आणि पर्यावरणीय घटक यांचा शाश्वत शेतीच्या उत्पादकतेवर आणि जल व्यवस्थापन तंत्र स्वीकारण्यावर थेट व परस्परसंबंधित प्रभाव आहे. त्यामुळे शाश्वत शेती साध्य करण्यासाठी केवळ तांत्रिक उपाय नव्हे, तर आर्थिक व पर्यावरणीय घटकांचा समन्वित विचार करणे अत्यावश्यक आहे.

#### ७. चर्चा

प्रस्तुत संशोधनातील निष्कर्ष वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापन व शाश्वत शेतीची उत्पादकता यांमधील दृढ परस्परसंबंध स्पष्टपणे अधोरेखित करतात. आधुनिक जल व्यवस्थापन तंत्रांचा अवलंब केल्यास उत्पादनक्षमता, आर्थिक कार्यक्षमता आणि संसाधनांचा शाश्वत वापर यांमध्ये लक्षणीय सुधारणा होते, हे या अभ्यासातून सिद्ध झाले आहे. हे निष्कर्ष विद्यमान साहित्यातील निरीक्षणांशी सुसंगत आहेत.

जल व्यवस्थापन तंत्र आणि उत्पादनक्षमता यांमधील सकारात्मक संबंधाबाबतचे निष्कर्ष Molden (1997) आणि Jalota इ. (2007) यांच्या अभ्यासांशी सुसंगत आहेत. त्यांनी कार्यक्षम सिंचनामुळे जल उत्पादकता वाढते व पीक उत्पादनात सुधारणा होते, असे निदर्शनास आणले आहे. प्रस्तुत अभ्यासातही ठिबक व तुषार सिंचन स्वीकारलेल्या शेतकऱ्यांची पिकनिहाय उत्पादनक्षमता पारंपारिक पद्धती वापरणाऱ्या शेतकऱ्यांच्या तुलनेत अधिक असल्याचे आढळून आले. यावरून जल वापराची अचूकता, योग्य वेळेचे सिंचन आणि पाण्याचा अपव्यय कमी होणे हे घटक उत्पादनवाढीस कारणीभूत ठरतात, हे स्पष्ट होते.

खर्च-लाभ गुणोत्तराच्या दृष्टीने आधुनिक जल व्यवस्थापन पद्धती अधिक लाभदायक ठरतात, हा निष्कर्षही विद्यमान साहित्याला पुष्टी देणारा आहे. Gathala इ. (2020) यांनी सूक्ष्म सिंचन तंत्रे दीर्घकालीन आर्थिक लाभ देतात, असे नमूद केले आहे. प्रस्तुत अभ्यासात प्रारंभीचा खर्च अधिक असला तरी उत्पादनवाढ, पाण्याची

बचत व आगत खर्चातील घट यांमुळे एकूण नफा वाढतो, हे स्पष्ट झाले आहे. त्यामुळे अल्पकालीन खर्चाच्या दृष्टीने शेतकऱ्यांचा संकोच असला तरी दीर्घकालीन लाभ अधिक आहेत, हे अधोरेखित होते.

आर्थिक अडथळे आणि जल व्यवस्थापन तंत्र स्वीकारण्यातील संबंधाबाबतचे निष्कर्ष Kampman (2007) यांच्या निरीक्षणांशी सुसंगत आहेत. भांडवली मर्यादा, कर्जसुविधांची कमतरता, अनुदानांची अपुरी माहिती व देखभाल खर्च हे घटक शेतकऱ्यांच्या निर्णयक्षमतेवर परिणाम करतात. प्रस्तुत अभ्यासात कमी आर्थिक अडथळे असलेले शेतकरी आधुनिक तंत्रे अधिक प्रमाणात स्वीकारतात, तर जास्त अडथळे असलेले शेतकरी पारंपारिक पद्धतींवर अवलंबून राहतात. यावरून केवळ तांत्रिक नव्हे, तर आर्थिक हस्तक्षेपही तितकेच आवश्यक असल्याचे स्पष्ट होते.

पर्यावरणीय घटकांचा (पर्जन्यमान व जमिनीचा प्रकार) जल व्यवस्थापन तंत्र स्वीकारण्यावर होणारा परिणाम हा निष्कर्षही महत्त्वाचा आहे. विद्यमान साहित्यामध्ये कृषी निर्णय हे स्थानिक भौगोलिक व हवामान परिस्थितीशी निगडित असल्याचे नमूद केले आहे. प्रस्तुत अभ्यासात मध्यम पर्जन्यमान व चिकणमाती असलेल्या भागांमध्ये आधुनिक जल व्यवस्थापन तंत्रांचा अवलंब अधिक असल्याचे दिसून आले. यावरून “one-size-fits-all” धोरणाऐवजी क्षेत्रनिहाय धोरणांची आवश्यकता अधोरेखित होते.

एकूणच, या संशोधनातील निष्कर्ष विद्यमान साहित्यातील सिद्धांतांना अनुभवाधारित आधार देतात आणि वर्धा जिल्ह्यासारख्या अर्धशुष्क भागांमध्ये शाश्वत शेतीसाठी जल व्यवस्थापन हे केंद्रस्थानी असले पाहिजे, हे ठळकपणे अधोरेखित करतात.

#### ८. निष्कर्ष व धोरणात्मक सूचना:

प्रस्तुत संशोधनातून वर्धा जिल्ह्यातील जलस्रोत व्यवस्थापन आणि शाश्वत शेतीची उत्पादकता यांमधील घनिष्ठ व बहुआयामी संबंध स्पष्ट झाला आहे. आधुनिक व वैज्ञानिक जल व्यवस्थापन तंत्रांचा अवलंब केल्यास शेती उत्पादनक्षमता वाढते, खर्च-लाभ गुणोत्तर सुधारते आणि संसाधनांचा शाश्वत वापर सुनिश्चित होतो, हे या अभ्यासाचे प्रमुख निष्कर्ष आहेत. यासोबतच, आर्थिक अडथळे व पर्यावरणीय घटक हे जल व्यवस्थापन तंत्र स्वीकारण्याच्या

निर्णयात निर्णायक भूमिका बजावतात, हेही अधोरेखित झाले आहे.

अभ्यासातून असे निष्पन्न होते की, जलस्रोतांचे अकार्यक्षम व्यवस्थापन केवळ उत्पादनात घट घडवून आणत नाही, तर शेतकऱ्यांच्या आर्थिक असुरक्षिततेतही भर घालते. याउलट, सूक्ष्म सिंचन व पाणीसंवर्धन तंत्रांचा समन्वित वापर केल्यास दीर्घकालीन शाश्वत शेती साध्य होऊ शकते. त्यामुळे जल व्यवस्थापन हे तांत्रिक विषयापुरते मर्यादित न राहता आर्थिक, सामाजिक व पर्यावरणीय घटकांचा समावेश असलेले एकात्मिक धोरण असणे आवश्यक आहे.

#### धोरणात्मक सूचना:

1. **सूक्ष्म सिंचनासाठी लक्षित आर्थिक सहाय्य-** ठिबक व तुषार सिंचनासाठी अनुदाने, सुलभ कर्जसुविधा आणि व्याज सवलती, विशेषतः अल्प व मध्यम भूधारक शेतकऱ्यांसाठी वाढवाव्यात.
2. **क्षेत्रनिहाय जल व्यवस्थापन धोरणे-** पर्जन्यमान, जमिनीचा प्रकार आणि पिकांची रचना लक्षात घेऊन स्थानिक गरजांनुसार जल व्यवस्थापन धोरणे तयार करावीत.
3. **शेतकरी प्रशिक्षण व जागरूकता कार्यक्रम -** जल कार्यक्षमता, पाणीसंवर्धन तंत्रे आणि दीर्घकालीन आर्थिक लाभ यांविषयी कृषी विस्तार सेवांच्या माध्यमातून शेतकऱ्यांना प्रशिक्षण देण्यात यावे.
4. **संस्थात्मक समन्वय बळकट करणे -** कृषी विभाग, जलसंपदा विभाग, बँका व कृषी विज्ञान केंद्रे (KVK) यांच्यात समन्वय साधून एकात्मिक अंमलबजावणी सुनिश्चित करावी.
5. **शाश्वत शेतीसाठी दीर्घकालीन दृष्टीकोन -** जलस्रोत व्यवस्थापनाला हवामान बदल अनुकूलन (Climate Change Adaptation) धोरणांशी जोडून दीर्घकालीन कृषी शाश्वततेस प्राधान्य द्यावे.

समारोपार्थ, वर्धा जिल्ह्यासारख्या अर्धशुष्क भागांमध्ये शाश्वत शेती साध्य करण्यासाठी जलस्रोतांचे प्रभावी व्यवस्थापन हा कळीचा घटक आहे. प्रस्तुत संशोधनाचे निष्कर्ष धोरणकर्ते, संशोधक आणि कृषी विकासाशी संबंधित संस्थांसाठी मार्गदर्शक ठरून इतर कोरडवाहू भागांमध्येही अनुकरणीय ठरू शकतात.

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## महाराष्ट्रातील सार्वजनिक आरोग्य खर्चाचा आढावा

क्रांती सुहास बोरावके

सहयोगी प्राध्यापक,  
बाबुरावजी घोलेप कॉलेज, पुणे, महाराष्ट्र

### गोषवारा:

प्रस्तुत अभ्यासाचे उद्दिष्ट महाराष्ट्रातील आरोग्य खर्चाचा मागील दशकातील आढावा घेणे आणि त्याचा आर्थिक परिणाम तपासणे, हे आहे. आरोग्यसेवा हे लोकसंख्येचे कल्याण आणि प्रदेशाची आर्थिक स्थिरता या दोन्हीवर प्रभाव पाडणारे महत्त्वपूर्ण क्षेत्र आहे. असे महत्त्वपूर्ण क्षेत्र समजून घेणे, त्याचे आर्थिक परिणाम सर्वोपरि अभ्यासणे हे या अभ्यासाचे उद्दिष्ट आहे. युनिव्हर्सल हेल्थ कव्हरेज (UHC) साध्य करण्याच्या दिशेने भारताचा प्रवास सुरू असताना, आरोग्यसेवा सुलभता सुधारण्यासाठी, आर्थिक अडचणी कमी करण्यासाठी आणि सार्वजनिक आरोग्य पायाभूत सुविधा वाढविण्यासाठी सरकारच्या वचनबद्धतेवर प्रकाश टाकण्याचा प्रयत्न या शोधनिबंधात केला आहे. सरकारी अहवाल, आरोग्यसेवा नोंदी आणि आर्थिक सर्वेक्षण यासारख्या स्रोतांच्या आधारे महाराष्ट्रातील आरोग्याच्या संदर्भातील खर्चाच्या प्रवृत्तीचे मूल्यांकन प्रस्तुत शोधनिबंधात केले आहे.

**बीज शब्द:** सार्वजनिक आरोग्य सेवा प्रणाली, एकूण आरोग्य खर्च (THE), शासनाचा आरोग्य खर्च (GHE), आरोग्यावरील खिशातील खर्च (OOPE), स्थूल देशांतर्गत राज्य उत्पादन (GSDP), सामाजिक कल्याण, खर्च प्रवृत्ती, सामान्य शासन खर्च (GGE).

### प्रस्तावना:

भारतातील सर्वात मोठी राज्य अर्थव्यवस्था असलेले महाराष्ट्र हे दुसऱ्या क्रमांकाचे लोकसंख्या असलेले आणि तिसऱ्या क्रमांकाचे शहरीकरण झालेले राज्य आहे. तथापि, त्याचे आर्थिक सामर्थ्य असूनही, राज्याला आंतरजिल्हा असमानता आणि आरोग्य सेवा क्षेत्राशी संघर्षाचा सामना करावा लागत आहे. सार्वजनिक आरोग्य प्रणाली तिच्या कार्यक्षेत्र आणि समुदायांसाठी उपलब्ध रुग्णालयांची संख्या या दोन्ही बाबतीत अपुरी आहे. ग्रामीण आणि शहरी दोन्ही भागात सरकारी रुग्णालयांचा आंतररुग्ण सेवेसाठी वापर कमी होत आहे. सरकारी सुविधांना आरोग्यसेवा पुरवठादारांची कमतरता, तज्ञांची मर्यादित श्रेणी, जास्त गर्दी आणि निकृष्ट सेवा गुणवत्ता यांचा सामना करावा लागत आहे. या आव्हानांना जोडून, खाजगी रुग्णालय क्षेत्र सार्वजनिक क्षेत्राच्या दुप्पट आहे, ज्यामुळे भौगोलिक प्रवेश असमानता आणखी वाढली आहे. आरोग्यसेवेवरील राज्याचा खर्च हे आर्थिक कामगिरी आणि सामाजिक कल्याणावर होणाऱ्या संभाव्य प्रभावामुळे अभ्यासाचे एक महत्त्वाचे क्षेत्र आहे. आरोग्य सेवा सुविधांच्या मागण्यांमध्ये वाढ होत असल्याने आरोग्य सेवा खर्चाचे आर्थिक परिणाम समजून घेणे महत्त्वाचे ठरते.

### संशोधनाची उद्दिष्टे:

1. महाराष्ट्राच्या सार्वजनिक आरोग्य सेवा प्रणालीचा आढावा घेणे.
2. महाराष्ट्रातील आरोग्यसेवा खर्चाच्या गेल्या दशकातील 2014-15 ते 2021-22 या कालावधीतील प्रवृत्ती अभ्यासणे.
3. केंद्र शासन आणि राज्य शासनाच्या आरोग्य सेवा खर्चाच्या प्रवृत्तीची तुलना करणे.

### संशोधन पद्धती:

प्रस्तुत संशोधन हे संपूर्णतः दुय्यम स्रोतांवर आधारित आहे. त्यासाठी केंद्र व राज्य शासनाचे विविध अहवाल, आरोग्यसेवा नोंदी आणि आर्थिक सर्वेक्षण, संदर्भ ग्रंथ, वेबसाईट इत्यादी स्रोतांचा वापर केला आहे. विश्लेषणासाठी तक्ता आणि आलेखांचा वापर केला आहे.

### महाराष्ट्राची सार्वजनिक आरोग्य सेवा प्रणाली:

राज्यात विकसित आरोग्य सुविधा आहे जी आपल्या नागरिकांना, विशेषतः ग्रामीण भागात सर्वसमावेशक आरोग्य सेवा देते. गिनी वर्म, स्मॉल पॉक्स यांसारख्या मोठ्या आजारांवर आरोग्य विभागाने वाढत्या प्रमाणात नियंत्रण मिळवले आहे. त्याच वेळी, प्रांतात

कुष्ठरोग, धनुर्वात यासारख्या आजारांचे निर्मूलन झाले आहे. 2011 पासून, महाराष्ट्राच्या पोलिओ लसीकरण कार्यक्रमांमुळे पोलिओ निर्मूलन झाले आहे.

महाराष्ट्रातील सार्वजनिक आरोग्य विभाग हा प्रामुख्याने प्राथमिक आणि दुय्यम स्तरावरील आरोग्य सुविधा पुरवितो. प्राथमिक आरोग्य केंद्रांच्या माध्यमातून रोग नियंत्रण कार्यक्रम राबविले जातात. सार्वजनिक क्षेत्रातील तृतीय आरोग्य सेवा सुविधा या प्रामुख्याने वैद्यकीय शिक्षण आणि संशोधन संचलनालयाद्वारे व्यवस्थापित केल्या जातात. मुंबईसारख्या महानगरात आरोग्य सेवा सुविधा या त्या शहरांच्या स्थानिक संस्थांद्वारे व्यवस्थापित केल्या जातात.

राज्याला मोठ्या प्रमाणात संसर्गजन्य रोग आणि इतर प्रकारचे रोग यांच्याशी सामना करावा लागत आहे. महाराष्ट्रामध्ये असंसर्गजन्य रोग तसेच 2019 नंतर कोविड-19 सारख्या संसर्गजन्य रोगांचे प्राबल्य मोठ्या प्रमाणात दिसून येते. त्यामुळे आरोग्य सुविधा अधिक मजबूत करण्याची गरज प्रकर्षाने जाणवते. आरोग्यावरील गुंतवणूक अलीकडील काळात अधिक महत्त्वपूर्ण ठरते आहे. ग्रामीण आणि शहरी दोन्ही भागांमध्ये सार्वजनिक रुग्णालयांची संख्या पुरेशी नाही. तसेच सार्वजनिक रुग्णालयातील आरोग्य सेवांची कमतरता, विशेषज्ञ सेवांची मर्यादित श्रेणी, इस्पितळांमध्ये असणारी गर्दी, निकृष्ट दर्जाच्या आरोग्य सेवा अशा अनेक कारणांमुळे गरजू लोक परवडत नसतानाही खाजगी रुग्णालय सेवांना प्राधान्य देत असल्याचे दिसत आहे. यामुळे खिशातील खर्चांमध्ये वाढ होताना दिसत आहे. सार्वजनिक रुग्णसेवा असूनही लोकांना नाईलाजाने खाजगी आरोग्य सुविधांचा आधार घ्यावा लागतो आहे.

महाराष्ट्राच्या सार्वजनिक आरोग्य सेवा सुविधांमध्ये अनेक प्रकारच्या त्रुटी दिसून येतात. आरोग्य सुविधांची कमतरता आणि त्याचबरोबर नागरिकांना सुविधा केंद्रांपर्यंत पोहोचण्यातील अडथळे दिसून येतात. सामान्य नागरिकांचा विश्वास मजबूत करण्यासाठी जिल्हा आणि उपजिल्हा रुग्णालयांमध्ये विशेषज्ञ सेवांची व्याप्ती वाढवणे महत्त्वपूर्ण आहे. महाराष्ट्रातील 100 पेक्षा जास्त बेड संख्या असलेल्या बहुतांश महिला रुग्णालयांमध्ये गर्दी आहे. म्हणजेच मातृत्व आणि बाळाचे आरोग्य रुग्णालय यांची मागणी वाढलेली आहे, असे दिसून येते. महाराष्ट्रातील मुंबई, पुणे यासारख्या मोठ्या शहरांमध्ये सार्वजनिक पायाभूत आरोग्य सुविधा या आरोग्य केंद्रापासून महानगरपालिका रुग्णालयांपर्यंत उपलब्ध आहेत. तथापि

नागरी आरोग्याच्या पायाभूत सुविधा अपुऱ्या आहेत. महाराष्ट्रातील खाजगी रुग्णालयांची संख्या सार्वजनिक रुग्णालयांच्या संख्येपेक्षा दुप्पट आहे. शासनाच्या मदतीचा अभाव, अपुरी भरती आणि रिक्त पदे भरण्यात होणारा विलंब या कारणांमुळे महाराष्ट्रात सार्वजनिक आरोग्य सेवा सुविधांमध्ये तज्ञांची मोठ्या प्रमाणात कमतरता आहे. covid-19 च्या संकटकाळी आरोग्यासंबंधीची असुरक्षितता स्पष्ट झाली. राज्यात सार्वजनिक आरोग्य सिव्हील सर्जन आणि काही पॅरामेडिकल कॅडर मध्ये लक्षणीय कमतरता दिसून येतात. या कमतरता कमी करण्यासाठी वैद्यकीय शिक्षण आणि संशोधन संचलनालय, महाराष्ट्र आरोग्य विज्ञान विद्यापीठ आणि आरोग्य आयुक्त यांच्यात समन्वय साधून सुधारणा करणे आवश्यक आहे. अशाप्रकारे समन्वय साधून जिल्हा आणि उपजिल्हा रुग्णालयांची कार्यक्षमता वाढविणे आणि दुय्यम स्तरावरील रुग्णालयांमध्ये डॉक्टर आणि परिचारिकांचा व्यवसाय कौशल्य विकास करणे शक्य होऊ शकते. वैद्यकीय महाविद्यालये हे तृतीय वैद्यकीय सेवेचे स्रोत आहेत. वैद्यकीय सेवेच्या संतुलित प्रादेशिक वितरणासाठी आरोग्य सुविधा कमी असलेल्या भागात हॉस्पिटलसहित वैद्यकीय महाविद्यालयांची संख्या वाढणे आवश्यक आहे.

#### महाराष्ट्रातील आरोग्य सेवा खर्च:

**एकूण आरोग्य खर्च** (Total Health Expenditure-THE): National Health Account-NHA अंदाजानुसार महाराष्ट्रातील एकूण आरोग्यावरील खर्च(THE) यात सातत्याने वाढ दिसत आहे. 2014-15 मध्ये राज्याचा एकूण आरोग्य खर्च हा 53,122 कोटी रुपये इतका होता. त्यात वाढ होऊन 2021-22 पर्यंत त्यात वाढ होऊन हा खर्च 104 578 कोटी रुपये इतका झाला आहे. राज्याचा एकूण प्रतिमाणसी आरोग्य खर्चही सातत्याने वाढलेला दिसतो. 2014-15 मध्ये प्रतिमाणसी एकूण आरोग्य खर्च 4502 रुपये होता तर 2021-22 मध्ये 8361 रुपये इतका झाला. एकूण आरोग्य खर्चाचा स्थूल देशांतर्गत राज्य उत्पादनातील(GSDP) तील वाटा 2014-15 मध्ये 3.0 टक्के होता. 2018-19 पर्यंत त्यात घट होऊन तो 2.6% इतका झाला. मात्र कोविड-19 संकटानंतर त्यात थोड्या प्रमाणात वाढ झालेली दिसते. 2021-22 मध्ये हा वाटा 3.4% पर्यंत वाढलेला दिसतो. मात्र भारताच्या सरासरी पेक्षा ही वाढ कमी आहे.

**तक्ता क्र. १ : महाराष्ट्रातील आरोग्य खर्चाची संरचना व प्रवृत्ती (२०१४-१५ ते २०२१-२२)**

वर्ष	राज्याचा आरोग्यावरील एकूण खर्च (THE)			राज्य शासनाचा आरोग्यावरील खर्च (GHE)					राज्याचा आरोग्यावरील खिशातील खर्च (OOPE)			
	राज्याचा आरोग्यावरील एकूण खर्च (THE) (कोटी ₹)	प्रति माणसी एकूण खर्च (रुपये)	एकूण आरोग्य खर्चाचा GDP मधील वाटा (% of GDP)	राज्य शासनाचा आरोग्यावरील खर्च (कोटी रुपये)	राज्याचा आरोग्यावरील एकूण खर्चातील राज्य शासनाच्या खर्चाचा वाटा (% of THE)	GSDP मधील राज्य शासनाच्या खर्चाचा वाटा (% of GSDP)	प्रति माणसी आरोग्य खर्च (रुपये)	राज्य शासनाच्या आरोग्य खर्चाचा GGE मधील वाटा (% of GGE)	राज्याचा आरोग्यावरील खिशातील खर्च (OOPE) (कोटी रुपये)	प्रति माणसी खर्च (रुपये)	राज्याचा आरोग्यावरील खिशातील खर्चाचा GDP मधील वाटा (% of GDP)	राज्यातील एकूण खर्चातील OOPE चा वाटा (% of THE)
14-15	53122	4502	3	9009	17	0.5	763	4.6	31675	2684	1.8	59.6
15-16	56806	4734	2.8	13443	23.7	0.7	1120	6.3	33459	2788	1.7	58.9
16-17	63046	5210	2.9	14708	23.3	0.7	1216	6.2	35771	2956	1.6	56.7
17-18	63350	5236	2.6	16406	25.9	0.7	1356	6.1	31092	2570	1.3	49.1
18-19	66703	5467	2.6	17934	26.9	0.7	1470	5.9	32251	2644	1.3	48.1
19-20	77501	6301	2.8	20606	26.6	0.8	1675	6.1	34177	2779	1.2	44.1
20-21	86268	6957	3.3	26754	31	1	2158	7.9	36577	2950	1.4	42.4
21-22	104578	8361	3.4	35895	34.3	1.2	2872	9.1	39796	3184	1.3	38.3

**Source:** National Health Account (NHA) estimates for the fiscal years 2014-15 to 2021-22.

**राज्य शासनाचा आरोग्य खर्च (Government Health Expenditure-GHE)**

राज्य शासनाचा आरोग्यावरील खर्च 2014-15 मध्ये 9009 कोटी रुपये इतका होता. त्यात वाढ होऊन 2021-22 पर्यंत 35895 कोटी रुपये झाला. राज्य शासनाचा आरोग्यावरील खर्च हा 2014-15 ते 2019-20 पर्यंत खूपच कमी होता. 2020-21 आणि 2021-22 या वर्षात या खर्चात बऱ्यापैकी वाढ झाली. राज्याच्या एकूण आरोग्यावरील खर्चातील राज्य शासनाचा वाटा 2014-15 मध्ये 17 टक्के इतका कमी होता. 2019-20 पर्यंत हा वाटा फक्त 26.6% पर्यंत वाढला. भारताच्या सरासरी पेक्षा हा वाटा खूपच कमी होता. कोविड संकटानंतर मात्र त्यात वाढ दिसून येते.

2021-22 मध्ये त्यात 34 टक्क्यांपर्यंत वाढ झालेली दिसते. राज्य शासनाच्या प्रति माणसी खर्चातही वाढीची प्रवृत्ती दिसून येते. 2014- 15 मध्ये प्रति माणसी खर्च 763 रुपये होता तो 2021-22 मध्ये 2872 रुपये पर्यंत वाढला आहे. राज्य शासनाच्या स्थूल देशांतर्गत राज्य उत्पादनातील(GSDP) वाटा 2014-15 मध्ये 0.5% इतका होता तो 2021-22 मध्ये 1.2 टक्क्यांपर्यंत वाढलेला दिसतो. मात्र स्थूल देशांतर्गत राज्य उत्पादनातील; राज्य शासनाच्या आरोग्यावरील खर्चातील वाढीचा दर खूपच कमी आहे. शिवाय केंद्र सरकारच्या तुलनेत ही वाढ कमी दिसते. 2014-15 मध्ये केंद्र शासनाच्या खर्चाचा देशांतर्गत उत्पादनातील (GDP) वाटा 1.13 % इतका होता तो 2021-22 मध्ये 1.84 टक्क्यांपर्यंत वाढला.

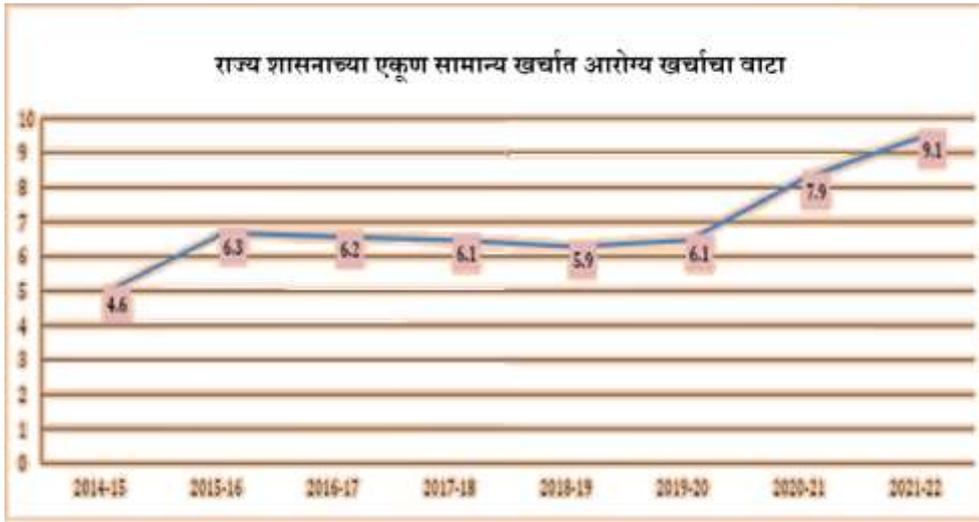
**आलेख क्र. -१**



राज्य शासनाचा आरोग्य खर्चाचा, सामान्य शासन खर्चातील (General Government Expenditure-GGE) वाटा 2014-15 मध्ये 4.6 टक्के इतका होता. त्यामध्ये 2015-16 मध्ये 6.1% पर्यंत वाढ झालेली दिसते. मात्र 2018-19 या वर्षापर्यंत राज्य शासनाच्या आरोग्य खर्चाचा सामान्य शासन खर्चातील वाटा 5.9% पर्यंत घटलेला दिसतो. त्यानंतर मात्र त्यात उल्लेखनीय वाढ दिसते. 2021-22 मध्ये हा वाटा 9.1%

पर्यंत वाढला आहे. 2021-22 मध्ये केंद्र शासनाच्या आरोग्य खर्चाचा सामान्य शासन खर्चातील वाटा 6.12% इतका होता. या तुलनेत महाराष्ट्राचा हा वाटा 3 टक्क्यांनी अधिक आहे. ही वाढ सार्वजनिक आरोग्य सेवा बळकट करण्याच्या सरकारच्या वचनबद्धतेवर प्रकाश टाकते. विशेषतः कोविड-19 साथीच्या आजारामुळे निर्माण झालेल्या आव्हानांना प्रतिसाद म्हणून ही वाढ उल्लेखनीय आहे.

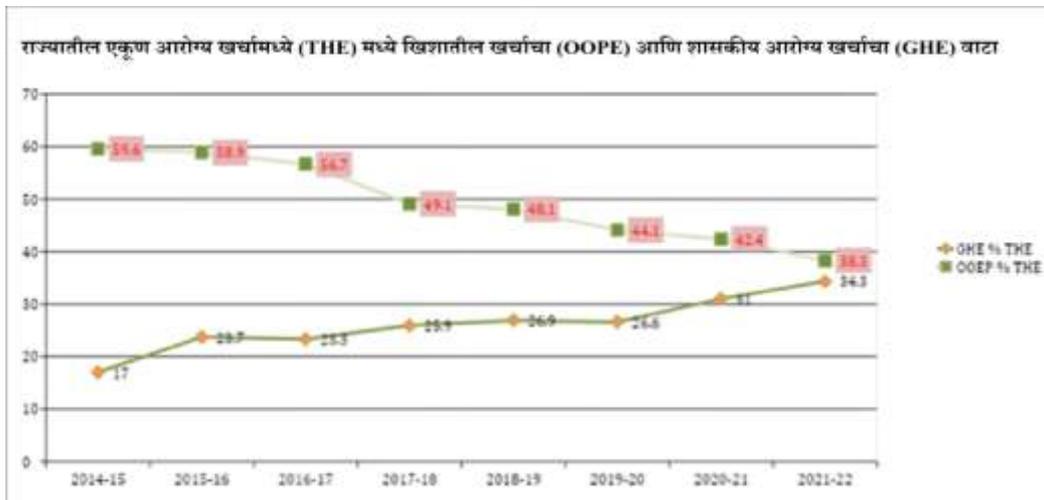
आलेख क्र. -२



**आरोग्य सेवेवरील खिशातील खर्च (Out-of-Pocket Expenditure on Health Care-OOPE):** खिशातील खर्चाची व्याख्या ही व्यक्तींनी आरोग्य सेवेसाठी केलेली थेट देयके म्हणून केली जाते. खिशातील खर्च (OOPE) हा पारंपरिकपणे भारतीय कुटुंबांवर एक महत्त्वाचा भार आहे. राज्यातील नागरिकांचा आरोग्यावरील

खिशातील खर्च हा 2014-15 मध्ये 31675 कोटी रुपये इतका होता. यामध्ये 2021-22 पर्यंत 39796 कोटी रुपये इतकी वाढ झाली. राज्याचा आरोग्यावरील खिशातील प्रतिमाणसी खर्च 2014-15 मध्ये 2684 रुपये इतका होता. त्यामध्ये 2020-21 पर्यंत 2950 रुपये इतकी वाढ झाली. 2021-22 मध्ये मात्र त्यात 2872 पर्यंत घट झाली आहे.

आलेख क्र. -३



तथापि, 2014-15 आणि 2021-22 दरम्यान, राज्यातील एकूण आरोग्य खर्चामध्ये (THE) मध्ये खिशातील खर्चाचा (OOPE) चा वाटा 59.6% वरून 38.3% पर्यंत घटलेला आहे. 2014-15 ते 2021-22 दरम्यान, केंद्र शासनाच्या एकूण आरोग्य खर्चामध्ये (THE) मध्ये खिशातील खर्चाचा (OOPE) चा वाटा 62.6% वरून 39.4% पर्यंत घटलेला आहे.

#### निष्कर्ष:

महाराष्ट्र राज्याचा आरोग्यावरील एकूण खर्चात गेल्या दशकात सातत्याने वाढ दिसत असली तरी 2014-15 पासून 2019-20 पर्यंत ही वाढ धीम्या गतीने होताना दिसते. त्यानंतर कोविड-19 महामारीच्या काळात मात्र त्यात बऱ्यापैकी वाढ झालेली दिसते. त्याचप्रमाणे राज्य शासनाच्या एकूण आरोग्य खर्चाचा राज्याच्या स्थूल देशांतर्गत उत्पादनातील वाटा मात्र फारसा वाढलेला दिसत नाही. राज्य शासनाच्या आरोग्यावरील खर्चाचा राज्याच्या स्थूल देशांतर्गत उत्पादनातील वाटा 2014-15 मध्ये 0.5% इतका होता. त्यात वाढ होऊन 2021-22 पर्यंत 1.2 टक्के इतका झाला. ही वाढ फारशी समाधानकारक नाही. केंद्र शासनाच्या तुलनेतही हा वाटा बराच कमी आहे. राज्याच्या सामान्य शासन खर्चातील राज्य शासनाचा आरोग्य खर्चाचा वाटा मात्र वाढीची प्रवृत्ती दर्शवितो. त्याचप्रमाणे राज्याच्या खिशातील खर्चाचा (OOPE)चा एकूण आरोग्य खर्चातील (THE) वाटा मात्र सातत्याने घटलेला आहे. राज्य शासनाच्या आरोग्य खर्चातील वाढीची प्रवृत्ती आणि त्याच वेळेला खिशातील खर्चाची घटती प्रवृत्ती हे आरोग्य सेवा सुविधा, पायाभूत सुविधा बळकट होत असल्याचे स्पष्ट करते. कोविड-19 साथीच्या रोगाने शाश्वत विकासासाठी मजबूत आणि लवचिक आरोग्य प्रणालींचे महत्त्व अधोरेखित केले आहे. कोविड-19 नंतरच्या कालावधीत महाराष्ट्र शासनाच्या आरोग्य सेवा खर्चामध्ये निश्चितपणे वाढीची प्रवृत्ती दिसते मात्र खाजगी आरोग्य सुविधांच्या तुलनेत सार्वजनिक आरोग्य सुविधांमध्ये गुणवत्तापूर्ण आणि प्रदेशनिहाय संतुलित वाढ करण्याच्या दृष्टीने शासनाच्या आरोग्य खर्चात संख्यात्मक आणि गुणात्मक अशी दोन्ही वाढ होणे आवश्यक आहे. सार्वजनिक आरोग्य सुविधांमधील गुंतवणुकीमुळे राज्याच्या आर्थिक स्थितीवर व्यापक प्रभाव पडतो आणि लोक कल्याणात वाढ होण्यास निश्चितपणे मदत होते. त्या दृष्टीने महाराष्ट्रातील सार्वजनिक खर्चातील वाढ महत्वपूर्ण ठरते.

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## पेसाकायदा- आदिवासींच्या आर्थिक उन्नतीसाठी सरकारचे उन्नत धोरण

### सीमा पावडे

अर्थशास्त्र विभाग, स्व. छगनलाल मुलजीभाई कढी कला  
महाविद्यालय,  
अचलपूर कॅम्प, जि. अमरावती, महाराष्ट्र

### राजेश चव्हाण

अर्थशास्त्र विभाग, स्व. छगनलाल मुलजीभाई कढी कला  
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अचलपूर कॅम्प, जि. अमरावती, महाराष्ट्र

### गोषवारा

पंचायत क्षेत्र विस्तार कायदा १९९६ आणि आदिवासींचा आर्थिक विकास या दोन बाबी परस्परावलंबी व एकमेकांना पुरक आहेत, पेसा कायदा १९९६ हा अत्यंत महत्वाचा कायदा केंद्रशासनाने पारित केला आहे. पेसा कायद्याची अंमलबजावणी प्रभावीपणे करण्यासाठी कराव्या लागणाऱ्या उपाययोजना प्रगत आदिवासींच्या विकासासाठी शासनाने महत्वाच्या घटनात्मक तरतुदींचा समावेश केला आहे. आदिवासींचा आत्मसन्मान टिकविण्याची व त्यांना आत्मनिर्भर, स्वावलंबी, बनविण्याची फार मोठी क्षमता या कायदयामध्ये आहे. त्यामुळे आदिवासींच्या जीवनामध्ये खऱ्या अर्थाने परिवर्तन घडून येणार आहे. पेसा कायद्याचा मुख्य उद्देश हा गावामध्ये राहणाऱ्या अनुसूचित क्षेत्रातील आदिवासी लोकांचे संरक्षण करणे आणि त्यांना वेगवेगळ्या सुविधा पुरविणे. प्रस्तुत शोध निबंधात अनुसूचित क्षेत्रातील आदिवासींसाठी सरकारचे धोरण, पेसा कायदा अस्तित्वात येण्याची कारणे, पेसा कायद्याची पार्श्वभूमी पेसा कायद्याची आवश्यकता, ५% अबंध निधी तसेच पेसा कायद्याची खरोखरच योग्य अंमलबजावणी झाली तर त्याचा आदिवासींच्या आर्थिक उन्नतीवर होणारा परिणाम इत्यादी बाबींचा अभ्यास करण्यात आला आहे.

**बिज शब्द:** पेसा, अनुसूचित क्षेत्र, तरतुदी, पंचायत, समुदाय

### प्रस्तावना :

भारताच्या संविधानातील अनुच्छेद ३३९ मध्ये अनुसूचित जातीजमातीच्या हिताचे संरक्षण होण्याची खास तरतुद करण्यात आली आहे. या तरतुदीच्या आधारे केंद्रशासनाने पंचायत क्षेत्र विस्तार कायदा १९९६ पारित केला. अनुसूचित क्षेत्रामध्ये आदिवासी लोकसंख्येची वस्ती नवीन सुधारणांपासून वगळण्यात आली होती. कमी मानव विकास निर्देशांक लक्षात घेता अनुसूचित क्षेत्रामध्ये स्थानिक प्रशासनाचे सक्षमीकरण करण्याची मोठी मागणी होती. अशाप्रकारे भारत सरकारने १९९४ मध्ये अशा कायद्याची आणि कार्यपद्धतीची आवश्यकता व त्याचा विस्तार करण्यासाठी एक समिती गठीत केली. या समितीने आदिवासी समुदायाच्या दुर्दशेवर व शोषणावर प्रकाश टाकला व १९९५ मध्ये आपल्या शिफारशी सादर केल्या आणि १९९६ मध्ये पेसा कायदा अस्तित्वात आला.

पेसा कायदा (Panchayat Extension to Scheduled Areas Act) पंचायत क्षेत्र विस्तार कायदा म्हणजे केंद्र शासनाचा कायदा आहे.

पेसा कायदा भारत सरकारने अनुसूचित क्षेत्रामध्ये राहणाऱ्या लोकांसाठी पारंपारिक ग्रामसभांच्या माध्यमातून स्वशासन व्यवस्था सुनिश्चित करण्यासाठी तयार केला आहे. पेसा कायद्याचे मुख्य सूत्र आहे अनुसूचित क्षेत्राच्या संस्कृती, प्रथा परंपरा यांचे जतन, संवर्धन व ग्रामसभेच्या माध्यमातून स्वशासन व्यवस्था मजबूत करणे अनुसूचित क्षेत्र भारतीय संविधानाच्या पाचव्या अनुसूचिद्वारे ओळखली जाणारी क्षेत्रे आहेत. अनुसूचित क्षेत्रे भारतातील दहा राज्यांमध्ये आढळतात. यामध्ये आंध्रप्रदेश, हिमाचल प्रदेश, गुजरात, राजस्थान, महाराष्ट्र, मध्यप्रदेश, ओडिसा, छत्तीसगड, तेलंगणा, झारखंड या राज्यांचा समावेश होतो. महाराष्ट्र राज्यामध्ये १३ जिल्हांचा समावेश होतो. ज्यात प्रामुख्याने आदिवासीची लोकसंख्या आहे.

अमरावती विभागातील दोन जिल्ह्यांमध्ये पेसा कायदा लागू होतो. अमरावती आणि यवतमाळ. अमरावती जिल्ह्यामध्ये धारणी आणि चिखलदरा अनुक्रमे १८५ व १५२ गावांचा पेसा कायद्यात समावेश होतो.

## तक्ता क्र.-१: अमरावती विभागातील पेसा कायदांतर्गत येणारी तालुके व गावांची संख्या

जिल्ह्याचे नाव	पूर्णतः तालुके	अंशतः तालुके	गावाची संख्या
अमरावती	धारणी	-	१५८
	चिखलदरा	-	१५२
यवतमाळ	-	पांढरकवडा	१३८
	-	मारेगाव	७६
	-	राळेगाव	४८
	-	घाटंजी	५६
	-	झरी-जामणी	९४
	-	आर्णी	१४

अनुसूचित क्षेत्रे भारतीय संविधानाच्या ७३ व्या घटनादुरुस्ती किंवा पंचायत राज कायद्याने घटनेच्या भाग नऊ मध्ये प्रदान केल्याप्रमाणे समाविष्ट नाही. काही अपवाद व सुधारणेसह राज्यघटेच्या भाग ९ (नऊ) च्या तरतुदी अनुसूचित क्षेत्रापर्यंत वाढविण्यासाठी २४ डिसेंबर १९९६ रोजी पेसा कायदा लागू करण्यात आला. पेसा कायदाकडे अनुसूचित क्षेत्रातील आदिवासी समुदायासाठी एक सकारात्मक विकास म्हणून पाहिल्या गेले. पेसा ने ग्रामपंचायतींना संसाधने, लहान वन उत्पादने, गौणखनिजे, किरकोळ पानवठे, लाभाध्यांची निवड, प्रकल्पांना मंजुरी आणि स्थानिक संस्थांवर नियंत्रण पेसा कायदा हा पंचायत आणि अनुसूचित क्षेत्राशी संबंधित घटनेच्या भाग ९ च्या तरतुदींचा विस्तार प्रदान करण्याचा कायदा आहे.

पेसा कायदा अनुसूचित क्षेत्रातील लोकांसाठी संजीवनी देणारा कायदा आहे. १९९३ मध्ये ७३ व्या घटनादुरुस्तीनंतर पंचायती राज संस्थांना संविधानिक दर्जा प्राप्त झाला होता. त्यापासून अनुसूचित क्षेत्रातील आदिवासींना वंचित ठेवणे योग्य नव्हते म्हणून भारत सरकारने पंचायत क्षेत्र विस्तार कायदा पारित केला.

पंचायत क्षेत्र विस्तार कायदा १९९६ केंद्राने ग्रामसभेद्वारे स्वशासन सुनिश्चित करण्यासाठी अनुसूचित भागात राहणाऱ्या लोकांच्या आदिवासी समुदायांचा अनुसूचित क्षेत्रातील रहिवासांचा, त्यांच्या स्वतःच्या स्वराज्य प्रणालीद्वारे, स्वतःचे शासन करण्याचा व गावाचा विकास करण्याचा अधिकार कायदेशिररित्या ओळखतो आणि नैसर्गिक संसाधनावरील त्यांचे पारंपारिक अधिकार देखील मान्य करतो. या उद्दिष्टांच्या अनुषंगाने पेसा ग्रामसभाना विकास योजना मंजूर करण्यात आली आणि

सर्व सामाजिक क्षेत्रावर नियंत्रण ठेवण्यासाठी महत्त्वाची भूमिका बजावण्याचे अधिकार देण्यात आले.

**पेसा कायदापूर्वीची आदिवासींची आर्थिक परिस्थिती:-**

आदिवासींचे जीवन कृषी व जंगलावर अवलंबून होते. ते निसर्गाच्या सानिध्यामध्ये राहून आपला उदरनिर्वाह करत होते. आजही त्यामध्ये फारसा बदल झालेला नाही. इंग्रजी सत्तेचा भारतामध्ये अंमल सुरू झाल्यानंतर आदिवासी जीवनामध्ये बाह्य हस्तक्षेप अधिक वाढला, त्यांचा हक्क डावलला गेला त्यामुळे आदिवासींमध्ये असंतोषाची भावना तीव्र झाली, इंग्रजी राजवटीमध्ये मोठ्या प्रमाणात जंगलतोड झाली. त्यामुळे जे आदिवासी उदरनिर्वाहासाठी जंगलावर अवलंबून होते त्यांच्यावर उपासमारीची वेळ आली.

आदिवासींमध्ये जमिनीच्या मालकीसंबंधी कोणतेही रेकोर्ड ठेवण्याची पध्दत नव्हती. जी जमिन त्यांच्या वसतीस्थानाजवळ होती व त्यावर ते आपला उदरनिर्वाह करत होते. जमिनीची व्यक्तीगत मालकी ही संकल्पनाच आदिवासींमध्ये नव्हती, परंतु इंग्रजांनी जमिनीची मोजणी करून वहिवाटीचा हक्क निश्चित करण्याचा प्रयत्न केला. त्यामुळे आदिवासींचा जमिनीच्या मालकीवरचा हक्क हिरावला गेला. आदिवासी क्षेत्रातील जमिन, धरणे, खाणी, वीज प्रकल्प, जंगले अशा अनेक कारणांमुळे अधिग्रहीत केली गेली व त्या ठिकाणाहून त्यांना हुसकावून लावले. त्यांच्या उदरनिर्वाहाचे साधन असलेल्या जमिनी विकास प्रकल्पासाठी अधिग्रहीत केल्या गेल्यामुळे त्यांच्याजवळ जमिन नाही व जंगलात प्रवेशबंदी त्यामुळे पोट भरण्यासाठी दुरच्या शेतकऱ्यांकडे, सावकारांकडे किंवा

ठेकेदाराकडे तो मजूर म्हणून राबू लागला व त्यांच्या पिळवणूकीस बळी ठरला.

जमीन, जंगल आदिवासी कडून अशारितीने हिरावून घेतल्याने आदिवासींपुढे उदरनिर्वाह व रोजगाराचा प्रश्न निर्माण झाला. त्यांची सरकारी मदतीवर अवलंबून राहण्याची वेळ आली हे होत असतांना आदिवासींच्या विकासाकडे मोठ्या प्रमाणात दुर्लक्ष झाले. या सर्वांचा परिणाम आदिवासींच्या जीवनावर झाला त्यामुळे आदिवासींमध्ये निरक्षरता, आर्थिक दुर्बलता, बेरोजगारी, उपासमार, कुपोषण अनारोग्य अशा समस्या त्यांच्यापुढे निर्माण झाल्या. आदिवासींच्या विकासासाठी जे थोडेफार प्रयत्न झाले ते सुध्दा निरूपयोगी ठरले.

**पंचायत क्षेत्र विस्तार कायदा १९९६ पार्श्वभूमी व निर्मिती: -**

कोणत्याही देशाचा विकास देशाच्या लोकसंख्येवर अवलंबून असतो. भारत हा देश लोकसंख्येने विपुल असा देश आहे. भारतामध्ये अनेक जातीधर्मांचे लोक राहतात त्यामुळे अनुसूचित क्षेत्रात राहणाऱ्या आदिवासी लोकांचा सुध्दा समावेश होतो. पेसा कायदा अस्तित्वात येण्याची सर्वात महत्त्वाची बाब म्हणजे आपल्या देशात आदिवासी लोकसंख्या बऱ्याच प्रमाणात आहे

२०११ जनगणनेनुसार भारताच्या एकूण लोकसंख्येचे आदिवासी लोकसंख्येशी प्रमाण ८.६१ टक्के इतके होते. इतकी मोठी लोकसंख्या असलेल्या लोकांना विकासापासून वंचित ठेवून देशाचा विकास साधने अशक्यप्राय होते. दुसरी महत्त्वाची बाब म्हणजे आदिवासी समाजाची विशिष्ट जीवनपध्दती, या समाजाची एक विशिष्ट संस्कृती आहे. त्यांच्यामध्ये वेगवेगळ्या गटांमध्ये वेगवेगळी भाषा आणि संस्कृती, रितीरिवाज, प्रथा, परंपरा आहेत. प्रगत समाजाला जसे कायदयाचे महत्त्व आहे तसे आदिवासी समाजामध्ये रूढी परंपरांना आहे. आदिवासी समाजामध्ये तंटे- विवाद हे रूढी परंपरेने सोडविले जातात.

भारताच्या राष्ट्रपतींना अनुच्छेद ३४२ ने एखादया जमातीला अनुसूचित यादमध्ये समाविष्ट करण्याचा किंवा वगळण्याचा अधिकार आहे. त्याच्या आधारे राष्ट्रपती अनुसूचित जमातीची यादी जाहीर करतात. त्याचप्रमाणे लोकसंख्येच्या आधारावर राष्ट्रपतींना अनुसूचित क्षेत्र घोषित करण्याचा अधिकार सुध्दा आहे. भारताच्या राष्ट्रपतींनी १९५० साली अनुसूची जाहीर केली. त्यामध्ये

२१२ जमातीचा समावेश होता. परंतु १९९० च्या अनुसूचित यादीमध्ये ४५८ जमातींचा समावेश आहे तर आजच्या स्थितीमध्ये आदिवासीची जमातीची संख्या ४१४ इतकी आहे.

ब्रिटिशांच्या कारकिर्दीमध्ये दुरगामी परिणाम करण्याच्या सुधारणा झाल्या, काही ब्रिटिश अधिकाऱ्यांनी आदिवासी क्षेत्रातील जीवनमान सुधारण्यासाठी प्रयत्न केले आहे. परंतु त्यांना पाहिजे तो प्रतिसाद मिळाला नाही. भारत स्वातंत्र्य झाल्यानंतर आदिवासींना मुख्य प्रवाहामध्ये कसे आणता येईल व भारताची एकात्मता कशी साधता येईल यादृष्टीने विचार सुरू झाला. भारताचे पाहिले पंतप्रधान पंडित जवाहरलाल नेहरू व त्यांच्या सरकारने १९५२ मध्ये आदिवासींच्या विकासासाठी पंचसूत्री जाहीर केली, नेहरूंजी पंचशील तत्त्वे या नावाने ती प्रसिध्द झाली आहे तो पुढीलप्रमाणे पाहता येईल.

१) आदिवासीचा विकास त्यांच्या प्रतिमा व क्षमतेनुसार व्हावा.

२) आदिवासींचा जंगल व जमिनीवरील हक्क मान्य करण्यात यावा.

३) आदिवासींना प्रशिक्षण देवून त्यांच्यामार्फत आदिवासींच्या विकासाला गती द्यावी व बाह्य हस्तक्षेप कमी करावा.

४) आदिवासी विकास त्यांच्या सांस्कृतिक व सामाजिक परंपरांना बाधा न आणता साधण्यात यावा.

५) आदिवासींच्या विकासाचा निकष हा त्यांच्यावर झालेला खर्च न मानता त्यांचे जीवनमान किती उंचावेल असा ठरविण्यात यावा.

या पंचसूत्रीच्या आधारे आदिवासी विकासाची धोरणे आखण्यात यावी.

पेसा कायदयाच्या प्रभावाविषयी बरेच प्रयत्न केले गेले आहेत, परंतु त्याआधी पंचायतराज प्रणाली, अनुसूचित क्षेत्राबद्दल समित्यांची संक्षिप्त माहिती जोडत आहे.

**यु.एन. देबर समिती (१९६०):** सन १९६० साली यु.एन. देबर यांच्या अध्यक्षतेखाली एका समितीचे गठीत करण्यात आली. अनुसूचित क्षेत्रातील आदिवासींच्या विकासासाठी भारताच्या राज्यघटनेतील अनुसूची सहा मधील आदिवासींच्या क्षेत्रातील तरतुदींच्या वापर कसा करण्यात

येईल, यासाठी वरील समिती गठित केली होती. या समिती ने अनुसूची सहामधील तरतुदी लागू करण्याची गरज नसून अनुसूचित क्षेत्राचे अधिकार राज्य शासनाला असावेत अशी शिफारस केली.

**बळवंतराय मेहता समिती (१९७५):** स्वतंत्र भारतामध्ये पंचायतराज व्यवस्थेचा जन्म बळवंतराय मेहता यांच्या अध्यक्षतेखाली सामुदायिक प्रकल्प आणि राष्ट्रीय विस्तार सेवांवरील अभ्यास पथक १९७५ मध्ये स्थापन करण्यात आले. सामुदायिक प्रकल्प आणि राष्ट्रीय विस्तार सेवांवरील अभ्यास पथक १९७५ मध्ये स्थापन करण्यात आले, सामुदायिक विकास कार्यक्रमांमध्ये लोकांच्या सहभागाचा अभाव होता. त्यासाठी त्यांनी पंचायत राजच्या त्रिस्तरीय प्रणालीची शिफारस केली होती.

**अशोक मेहता समिती (१९७७):** १९७७ मध्ये अशोक मेहता समितीची नियुक्ती पंचायतराज संकल्पना आणि कार्यपध्दतीत वळणबिंदू म्हणून पाहिल्या गेली. ग्रामीण भारत हा सर्व विकास कार्यक्रमांचा कणा असल्याचे त्यांची नोंदविले. पंचायत राजने भारतातील ग्रामीण जीवनातील तत्वज्ञान आणि कार्यामध्ये योगदान दिले पाहिजे असे स्पष्ट केले.

**जी. व्ही. के. राव समिती (१९८५):** या समितीला ग्रामीण विकासासाठी प्रशासकीय व्यवस्था आणि पंचायत संस्थांची भूमिका व त्यांचे प्रशासकीय व्यवस्थेशी संबंध पाहण्यास सांगितले होते. विकासकामांमध्ये नियमितपणे मोठ्या प्रमाणावर लोकांचा सहभाग असल्यास विकास शक्य आहे असा समितीचा विश्वास होता.

**एम. एल. सिंघवी समिती (१९८६):** या समितीने ग्रामसभेला महत्त्व दिले, स्थानिक स्वराज्य संस्थांना घटनात्मक मान्यता मिळावी, पंचायत स्तरावरील निवडणूका नियमितपणे आणि विलंब न लावता झाल्या पाहिजे. लोकशाहीचे बिजारोपण म्हणून ग्रामसभेकडे पाहिल्या गेले.

**सरकारिया आयोग:** या आयोगाने स्थानिक संस्थांना आर्थिक आणि कार्यात्मकदृष्ट्या मजबूत करण्याची शिफारस केली होती. पंचायत राज संस्थांना घटनात्मक मान्यता मिळावी अशी शिफारस केली होती.

सप्टेंबर १९९१ मध्ये संविधानातील ७२ वी घटनादुरुस्ती करण्यात आली होती. त्या घटनादुरुस्ती मध्ये बदल करून २२ डिसेंबर १९९२ रोजी लोकसभेत व २३ डिसेंबर १९९२ रोजी राज्यसभेत मंजूर करण्यात आली. भारत न सरकारने आदिवासींसाठी सर्वांगीण विकासाचे

धोरणे आखली होती. त्यांची काटेकोर अंमलबजावणी झालीच नाही हे भारत सरकारच्या लक्षात आले त्यानंतर १९९३ मध्ये ७३ वी घटनादुरुस्ती केली. या ७३ व्या घटनादुरुस्तीने पंचायत राज संस्थांकडे २९ विषय वर्ग करण्यात आले. भारताच्या संविधानातील अनुच्छेद २४३ (ड) नुसार ७३ व्या घटनादुरुस्तीतील तरतुदी २४४ खंड १ मध्ये निर्देश केलेल्या अनुसूचित क्षेत्रांना व खंड २ मध्ये नमुद केलेल्या अनुसूचित जनजाती क्षेत्रांना लागू करता येत नव्हता. परंतु संसदेला काही अपवाद व फेरबदलाच्या अधीन राहून सदर तरतुदीचा विस्तार अनुसूचित क्षेत्राला व अनुसूचित जनजाती क्षेत्राला लागू करण्याचा अधिकार होता. केंद्र शासनाच्या ग्रामविकास विभागाने खासदार दिलीपसिंह भूरिया यांच्या अध्यक्षतेखाली वरील तरतुदीचा अभ्यास करण्यासाठी एक समिती गठीत केली त्या समितीने काही शिफारशी केल्या.

१. ग्रामसभेला कायदेशीर अधिष्ठान प्राप्त व्हावेत तिच्या अधिकाराखाली आदिवासी विकासाचे निर्णय घ्यावेत.

२. आदिवासींचा जमिन जंगलातील हक्क मान्य करण्यात यावा.

३. आदिवासींच्या अंतर्गत व्यवहारामध्ये बाह्य हस्तक्षेप कमी करावा.

या शिफारशीच्या आधारे केंद्रशासनाने २४ डिसेंबर १९९६ रोजी पंचायत क्षेत्र विस्तार कायदा (पेसा) १९९६ पारित केला व आदिवासींना स्वशासनाचा अधिकार प्राप्त झाला.

महाराष्ट्र शासनाने दि. ४ मार्च २०१४ रोजी पेसा कायद्याचे नियम अंतिम केले. सन २०१५ मध्ये महाराष्ट्र राज्याने आदिवासी विभागाच्या एकूण बजेट च्या ५ टक्के इतकी रक्कम अनुसूचित क्षेत्रातील ग्रामसभेच्या ग्रामकोषात जमा करून लोकांना स्वतःच्या गरजेप्रमाणे विकास साधण्याची सोय निर्माण करून दिली आहे.

**संबंधित साहित्याचा आढावा: -**

अनेक लेखकांनी पेसा कायदा आणि त्याचा परिणाम यावर उपयुक्त लिखाण केले आहे. त्याचप्रमाणे आदिवासी आणि त्यांच्या विकासाबाबत काही मूल्यमापनात्मक अभ्यास पुढील प्रमाणे आहेत.

**पुरोहित (२००२):** - मध्य प्रदेशातील अनुसूचित क्षेत्रातील पंचायतीसाठी विशेष तरतुदी आणि अधिकारांचे विश्लेषण केले आहे. पेसा कायद्याच्या अंमलबजावणीसाठी जिल्हा परिषदेला अधिकार देणे आणि सामाजिक न्याय आणि

प्रशासन या सारख्या काही समस्या अनुसूचित क्षेत्रातील आदिवासी समाजाच्या जीवनशैलीच्या येतात असे प्रतिपादन केले.

**दास (२००३):** - यांनी असे नमूद केले की, मागास आदिवासी भागात लोकशाही सुनिश्चित करण्यासाठी पुरोगामी कायदे अस्तित्वात असूनही अशा भागामध्ये अविकसित आणि खराब प्रशासन आहे. नोकरशाही, ठेकेदार, राजकारणी लोक यांनी संगणमत करून आदिवासींना स्वतःची ओळख आणि त्यांच्या उपजिविकेचे अधिकारही नाकारले आहे. लेखकाने विकास कामांचा गैरवापर आणि आदिवासींना त्रास देण्याच्या घटनांवर प्रकाश टाकला आहे.

**महापात्रा आणि सिंग (२००९):** - ओडिसामध्ये पेसाची अंमलबजावणी केल्यामुळे कायदयामध्ये कल्पना केलेल्या आदर्श आणि उद्दिष्टांच्या बाबतीत कोणत्याही नेत्रदिपक बदल झालेला नाही. राज्य संस्था, राजकीय नेतृत्व नोकरशाही आणि बिगर आदिवासी आणि सत्ताधारी यांची भूमिका पारंपारिक पध्दतीने अस्तित्वात आहे. विकासाच्या करण्यासाठी ग्रामसभा फारसे काही करू शकत नाही असे दिसून आले.

**के. अण्णामणी राव (२०१८):** - पेसा कायदयाला केंद्र आणि राज्याकडून मिळालेला प्रतिसाद अपूरा आहे. बहुतेक राज्यामध्ये अजूनही पेसा तरतुदीच्या अंमलबजावणीसाठी नियम तयार केले नाहीत, मध्यप्रदेश, आंध्रप्रदेश आणि छत्तीसगड हे राज्ये पंचायतीमध्ये सुधारणा करण्यास नाखूष आहेत असे सांगितले.

**त्रिपाठी आणि महापात्रा (२००२):** - पेसा कायदयाने आदिवासी भागात स्थानिक प्रशासन आणि विकास कार्यक्रमांच्या विविध पैलूंबद्दल जागरूकता निर्माण करण्याची प्रक्रिया सुरू केली आहे. आणि विविध स्तरावरून लक्षणीय सहभाग निर्माण केला आहे. लोकसहभागामध्ये चांगला विकास होतो.

**अख्तर आणि अली (२०२२):** - यांनी छत्तीसगड मधील पेसा कायदयाच्या अंमलबजावणीची वास्तविकता प्रतिपादन केली आहे. पेसा कायदयाच्या अंमलबजावणीला २५ वर्षे उलटली असली तरी प्रत्यक्षात राज्यसरकार कडून त्याची अंमलबजावणी योग्य प्रकारे होत नाही किंवा कायदयाशी संबंधित नियमही तयार केले जात नाही. म्हणून ते असे म्हणतात की, पेसा कायदा १९९६ द्वारे अनुसूचित क्षेत्रामध्ये स्थानिक प्रशासनाची कल्पना फसव्यासारखी दिसते आणि आदिवासी समाजासाठी ती वास्तवाएवजी

मिथक आहे. सर्व लेखकांनी जो अभ्यास केला आहे तो आपआपल्या परीने उपयुक्त आहे. गावपातळीवर अभ्यासाच्या आधारे आदिवासी विकास कामांमध्ये आदिवासी या क्षेत्रामध्ये काम करणारे अधिकारी यांना भेडसावत असलेल्या समस्यांचा उहापोह केलेला आहे. हे जरी खरे असले तरी पेसा कायदा हा आदिवासींच्या आर्थिक उन्नतीला हातभार लावू शकतो. पेसा अंतर्गत गावातील विकास कामे, पायाभूत सुविधा रोजगार, स्थलांतरे इ. सारखे प्रश्न योग्य अंमलबजावणीद्वारे सोडवल्या जावू शकतात. या बाबींचा थोडक्यात अभ्यास करण्याचा प्रयत्न केला आहे.

**पेसा कायदयामुळे आदिवासींच्या आर्थिक उन्नतीवर (जीवनावर) होणारा परिणाम: -**

भारताला अति प्राचीन आणि वैविध्यपूर्ण अशी आदिवासी संस्कृती लाभलेली आहे. भारतात जवळपास ७०० आदिवासी जमाती आहेत त्यापैकी ४५ जमाती महाराष्ट्रामध्ये आढळतात. प्रत्येक आदिवासी जमातीच्या रूढी परंपरा आणि जीवन जगण्याच्या पद्धती वैशिष्ट्यपूर्ण आहेत. आदिवासींना त्यांची संस्कृती, परंपरा आणि त्यांच्या भोवतालचा नैसर्गिक परिसर, वनक्षेत्र, वन्यजीव, गौण खनिजे, औषधी वनस्पती यांचे जतन करता यावे याकरिता पंचायत अनुसूचित क्षेत्र विस्तार अधिनियम १९९६ तसेच वन हक्क अधिनियम २००६ अशा कायद्याद्वारे आदिवासी ग्रामसभांना विशेष अधिकार देण्यात आलेले आहेत. आदिवासींच्या विकासासाठी शासनाने स्वतंत्र आदिवासी उपयोजना लागू केलेली आहे या योजनेमार्फत आदिवासी क्षेत्रांच्या विकासाकरिता विशेष निधीची तरतूद करण्यात येते. ज्यादा विनिमय केवळ आदिवासींचे विकासाकरता करणे बंधनकारक आहेत. आदिवासी जमातीची संस्कृति, रूढी-परंपरा आणि जीवन जगण्याच्या पद्धती यांचे जतन करता यावे. याकरिता अशा पद्धतीने त्यांच्या विकासाच्या वैशिष्ट्यपूर्ण गरजा लक्षात घेऊन ग्रामसभेच्या माध्यमातून विकासाचे उपक्रम ठरविणे आवश्यक आहे.

आतापर्यंत केंद्रीय नियोजन पद्धतीने गावाचा विकास करण्याचा प्रयत्न शासनाने केलेला आहे. मात्र ७३ व्या घटना दुरुस्ती बरोबरच पेसा आणि वन हक्क कायदा यातील तरतुदीमुळे आदिवासींच्या लोकसहभागामुळे त्यांच्या विकासाचा प्रयत्न सुरू झाला आहे. राज्यपाल महोदय आणि भारतीय राज्यघटनेच्या अनुसूची पाच मधील परिच्छेद ५(१) एक नुसार प्राप्त अधिकाराचा वापर करून

३०ऑक्टोबर २०१४ अन्वये विविध कायद्यांच्या अनुषंगाने अधिसूचना निर्गमित केल्या आहे. त्यामध्ये महाराष्ट्र ग्रामपंचायत अधिनियम १९५९ मध्ये सुधारणा करण्यात आली आहे. त्यात राज्यातील अनुसूचित क्षेत्रातील ग्रामपंचायतींना दरवर्षी आदिवासी उपयोजनेच्या एकूण तरतुदीपैकी ५% निधी उपलब्ध करून देण्याच्या योजनेची अनुसूचित क्षेत्रातील ग्रामपंचायत निधी मान्यता देण्यात आलेली आहे. महाराष्ट्रामध्ये सन २०१५-२०१६ या आर्थिक वर्षामध्ये या योजनेसाठी सुमारे ₹२५८.५० कोटी इतका निधी अर्थसंकल्पीत करण्यात आला असून त्यापैकी ७० % म्हणजेच ₹ १८०.९५ कोटी इतका निधी वितरित करण्यास उपलब्ध झालेला आहे. या निधीचा उपयोग करताना पुढे दिलेल्या बाबींवर प्राधान्य आणि खर्च करणे अपेक्षित आहे त्यात प्रामुख्याने १) पायाभूत सुविधा २) वन अधिनियम व पेसा कायद्याची अंमलबजावणी ३) आरोग्य स्वच्छता शिक्षण ४) वनीकरण वन्यजीव जलसंधारण वनतडी वन्यजीव पर्यटन व उपजीविका या बाबींकरिता उपलब्ध निधीपैकी प्रत्येकी २५% निधी या प्रमाणात खर्च करावा. पेसा क्षेत्रातील ग्रामपंचायतींच्या लोकसंख्येच्या प्रमाणात हा निधी उपलब्ध करून देण्यात येणार आहे. शासनाकडून प्रत्येक ग्रामपंचायतीच्या ग्रामसभा कोषाच्या खात्यावर निधी बँकेमार्फत वितरित करण्यात येईल. यामुळे वर्षाच्या सुरुवातीलाच निधी जमा होणार असल्यामुळे वर्षभरात तो आपल्या गावाच्या विकासासाठी नियोजनबद्ध पद्धतीने वापरता येईल. आपल्या ग्रामपंचायतीअंतर्गत असलेली गावे, पाडे व वस्त्या यांच्यातील लोकसंख्येच्या प्रमाणात हा निधी वापरायचा आहे. त्यामुळे सर्वांना समान लाभ मिळून विकासापासून कोणीही वंचित राहणार नाही. गावाला मिळालेल्या निधीचा वापर करण्याचे स्वातंत्र्य ग्रामसभेला मिळाले आहे पण त्याचबरोबर योग्य प्रकारे वापर करण्याची मोठी जबाबदारी देखील ग्रामसभेवर आलेली आहे हे विसरता येणार नाही. यासाठी ग्रामसभेने अबंध निधीचा वार्षिक नियोजन आराखडा तयार करून दरवर्षी १ मे रोजी होणाऱ्या ग्रामसभेमध्ये वार्षिक आराखड्याला मान्यता घेणे बंधनकारक आहे. आराखडा तयार करताना गाव, पाडे, वस्त्या येथील ग्रामस्थांचा विचार घेणे आवश्यक आहे. गावाला मिळणाऱ्या थेट अबंध निधीतून विकासकामे हाती घेताना इतर योजनेखाली होऊ शकणारी नेहमीची कामे सोडून काही वेगळी आणि विशेष स्वरूपाची गावाला आवश्यक अशी कामे करता येतील. त्यामुळे गावाचा

सर्वांगीण आणि समतोल विकास होऊन गाव स्वावलंबी होऊ शकेल. विकास कामांची निवड करताना आपल्याला खालील दिलेल्या बाबींचा विचार करणे आवश्यक आहे.

- ◆ गावात रोजगार वृद्धी होण्यासाठी कौशल्यवृद्धी रोजगार विकास व उत्पन्न वाढ कशी होईल या बाबींकडे लक्ष देणे आवश्यक आहे.
- ◆ सार्वजनिक सुविधा उदाहरणार्थ भात गिरणी, धान्य बँक इत्यादी उपक्रम राबविता येतील.
- ◆ आरोग्य, शिक्षण, पोषण या अनुषंगाने उपलब्ध करून देता येणाऱ्या सेवांचे बळकटीकरण करता येईल.
- ◆ छोटे तलाव, गौण खनिजे, वनौषधी इत्यादींचे व्यवस्थापन करता येईल.
- ◆ पर्यटन विकासाचा उपक्रम राबविता येईल.
- ◆ दुर्गम भागामध्ये आवश्यक असणाऱ्या अतिरिक्त सुविधा किंवा त्यासाठी आवश्यक कर्मचारी देता येतील.
- ◆ सार्वजनिक उपलब्ध संसाधनांचे जतन आणि व्यवस्थापन करता येईल.
- ◆ पूर्वी गावात उपलब्ध असलेल्या परंतु नादुरुस्त झालेल्या सोयी सुविधांची दुरुस्ती आणि पुनर्जीवन करणे शक्य आहे.
- ◆ ग्रामपंचायत व ग्रामसभा समक्षीकरण करिता उपाययोजना करता येतील.

### पेसा कायद्याच्या प्रबळ अंमलबजावणीसाठी अबंध निधीची तरतूद

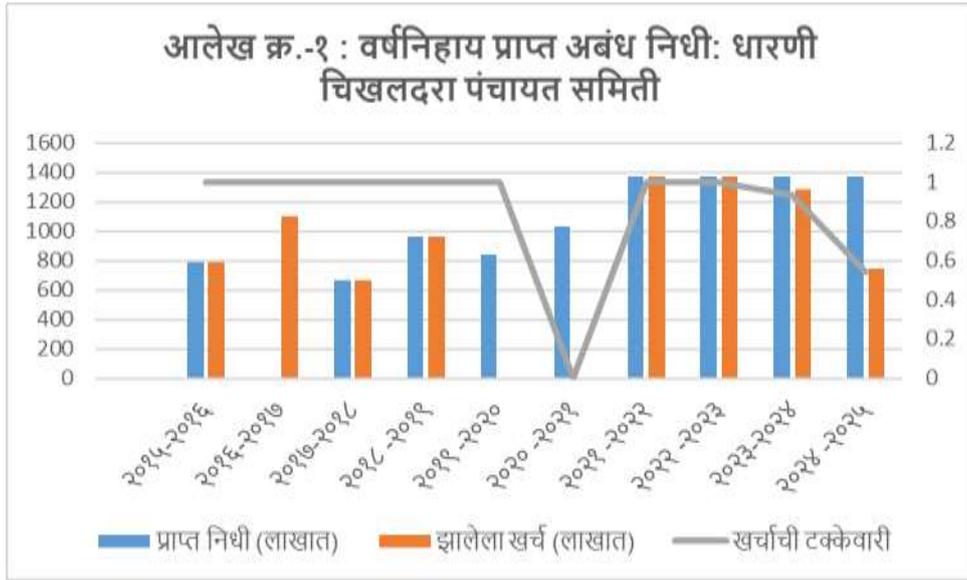
पेसा कायद्याची अंमलबजावणी करण्याकरिता अमरावती विभागातील धारणी आणि चिखलदरा या तालुक्याचे अभंग निधी प्राप्त झालेला असून त्यातून विकासाची कामे करण्यात आलेली आहेत.

सन २०१५-१६ मध्ये ७८९.९० लाख रुपये एकूण निधी प्राप्त झाला होता तो त्या वर्षामध्ये १०० % खर्च करण्यात आला. त्याचप्रमाणे २०१६-१७, २०१७-१८, २०१८-१९ या वर्षामध्ये सुद्धा प्राप्त निधीतून १००% खर्च करण्यात आलेला आहे. १०१९-२० या आर्थिक वर्षामध्ये एकूण निधी ८३८.१६ इतका होता, तर झालेला खर्च हा ४५८.३३ इतका होता तो एकूण खर्चाच्या ७५.२५ % खर्च करण्यात आला.

**तक्ता क्र.-२: वर्षनिहाय प्राप्त अबंध निधी: पंचायत समिती - धारणी चिखलदरा**

आर्थिक वर्ष	प्राप्त निधी (लाखात)	झालेला खर्च (लाखात)	खर्चाची टक्केवारी
२०१५-२०१६	७८९.२२	७८९.२२	१००.००%
२०१६-२०१७	१०९७.२९	१०९७.१	१००.००%
२०१७-२०१८	६६७.१	६६७	१००.००%
२०१८-२०१९	९५९.१६	९५९.१६	१००.००%
२०१९-२०२०	८३८.१६	८३८.१६	१००.००%
२०२०-२०२१	१०२७.६७	०.००	०.००%
२०२१-२०२२	१३७०.२४	१३७०.२४	१००.००%
२०२२-२०२३	१३७०.२४	१३७०.२४	१००.००%
२०२३-२०२४	१३७०.२४	१२७९.९	९३.४१%
२०२४-२०२५	१३७०.२४	७४३.०९	५४.२३%

स्रोत - जिल्हा परिषद, अमरावती



सन २०२०-२१ या आर्थिक वर्षामध्ये १३७०.२५ लाख रुपये इतका निधी प्राप्त झाला परंतु त्या आर्थिक वर्षामध्ये कुठल्याही प्रकारच्या निधीचा वाटप करण्यात आला नाही आणि कुठल्याही विकास कामे झाली नाहीत. त्यानंतर २०२१-२२ मध्ये १००% खर्च करण्यात आला. २०२२-२३ मध्ये १००% खर्च करण्यात आला. २०२३-२४ मध्ये ९३.४१ % खर्च करण्यात आला व २०२४-२५ मध्ये ५४.२३ % खर्च करण्यात आला. यामध्ये ग्रामपंचायत कार्यालय, आरोग्य केंद्र, शाळा, दफनभूमी, दुरुस्ती, प्रशिक्षण मत्स्य व्यवसाय, गौण पाणीसाठा नियोजन, सार्वजनिक स्वच्छतागृह, गावामध्ये स्वच्छता राखणे, शुद्ध

पिण्याचे पाणी पुरवणे, जलसंधारण, वनीकरण ,वन्यजीव संवर्धन, पर्यटन इत्यादी निकषांवर ५%निधी खर्च करण्यात आला.

आदिवासी समाजाचा उदरनिर्वाह व रोजगार कृषी व जंगल या दोन्हीवर अवलंबून आहे. कृषीबरोबरच जंगलातील वन उपजही महत्त्वाची आहेत तिचे व्यवस्थापन योग्य रितीने केल्यास आदिवासींना मोठ्या प्रमाणात रोजगार मिळू शकतो. पेसा कायद्याने आदिवासींचा कृषी आणि जंगलावरील हक्क मान्य केला त्यामुळे त्यांनी जर वनउपज गोळा करून तिचे वर्गीकरण करणे, तिच्यावर आवश्यक त्या प्रक्रिया करणे, तिचे मूल्यवृद्धीकरण करणे, गड्डे पॅकेजींग

करणे व विक्री करणे अशा अनेक बाबींमुळे त्यांना रोजगार प्राप्त होवून ते स्वतःची उन्नती साधू शकतात, पेसा कायदयामुळे लोकांच्या सहभागामुळे स्थानिक

साधनसंपत्तीचा योग्य वापर करून विकासाचे सातत्य राहिल. या योजनांची योग्य अंमलबजावणी केल्यास आदिवासींची आर्थिक परिस्थिती सुधारण्यास मदत होईल, कुपोषण, बेरोजगारी, स्थलांतर अशा समस्या कमी होतील, आदिवासी क्षेत्रामध्ये पाणीसाठ्यात मत्सबीज टाकून मत्समारीचे ठेके आदिवासींना किंवा आदिवासी संस्थांना देणे यामुळे आर्थिक उत्पन्न व आहाराची गुणवत्ता वाढीसाठी मदत होऊ शकेल पेसा कायद्यामार्फत अशा योजना गावांमध्ये राबविल्या जावू शकतात.

पंचायत क्षेत्र विस्तार कायदा १९९६ या कायदयाने वनउपजेवर आदिवासींचे मालकी मान्य केली आहे व ते ग्रामसभेच्या माध्यमातून तिचे व्यवस्थापन व विनिमय करू शकतात. परंतु एका व्यक्तीने असे करणे शक्य नाही म्हणून बचतगट, सहकारी संस्था ग्रामपंचायत यांच्या माध्यमातून आदिवासी लोक वनउपजेचे व्यवस्थापन करून स्वतःची आर्थिक उन्नती करू शकतात व त्यामधून अनेक लोकांना रोजगार उपलब्ध होऊ शकतो.

**निष्कर्ष:-**

आदिवासी भागातील नागरिकांना सर्वांगीण विकासासाठी त्या भागाच्या सामाजिक नैसर्गिक आणि भौगोलिक संपन्नतेसाठी करण्यात आलेल्या पंचायत क्षेत्र विस्तार कायदा म्हणजे आदिवासी लोकांच्या आयुष्यात सकारात्मक परिणाम करणारा आहे.

आदिवासींमध्ये व्ययसनाधिनता, अनारोग्य, अशिक्षितपणा, अंधश्रद्धा या सर्व समस्यांनी त्यांना जखडलेले आहे. शासनाने पेसा कायदा आदिवासींच्या आर्थिक व सर्वांगीण उन्नतीसाठी केला आहे. याची जर योग्य अंमलबजावणी झाली तर आदिवासींच्या जीवनमानाचा दर्जा उंचावू शकेल, त्यांना गावातच रोगार प्राप्त होईल त्यांची स्वतःच्या मालकीची जमिन असेल त्यावर ते उदरनिर्वाह करू शकतील त्यांची भटकंती सपेल, गावामध्ये ज्या स्थानिक पयाभूत सुविधा असतात जसे की शाळा, दवाखाना, रस्ते, शुध्द पाणीपुरवठा, वीज इ. त्यांना गावपातळीवरच उपलब्ध होतील, पेसा कायदयाने आपल्या गावाचा विकास स्वतःच्या गरजेप्रमाणे करण्याचा व आर्थिक उन्नती साधण्याचा अधिकार प्राप्त झाला आहे. पेसा कायदयाअंतर्गत आदिवासी विकास कामे करता

येतात. म्हणून पेसा कायदा आदिवासींसाठी संजिवनी ठरू शकतो. फक्त त्याची योग्य अंमलबजावणी होणे गरजेचे आहे. यासाठी शासकीय यंत्रणा व कर्मचारी, अधिका-यांना कोणकोणत्या अडचणी भेडसावतात याचाही विचार करावा लागेल. त्यावर योग्य ती पर्याय काढून आदिवासींना महत्त्व पटवून देणे व त्यांना आर्थिक विकासाच्या कामामध्ये सहभागी करून घेणे तितकेच महत्त्वाचे आहे. या सर्व बाबींचा विचार करून पेसा कायदा आदिवासींच्या जीवनामध्ये आमुलाग्र बदल घडवून आणू शकतो. यामध्ये शंका नाही. पेसा ग्रामपंचायतींना प्राप्त होणाऱ्या अबंध निधीतून गरजेनुसार गाव विकासाच्या कामात मदतीसाठी ग्रामसभेचा ठराव करून कंत्राटी कर्मचारी नेमता येतील. गावातील विविध समित्या गावाच्या विकासात सहकार्य करतील. ग्रामसभेच्या मागणीनुसार प्रशासकीय विभागाचे अभियंता, तांत्रिक व्यक्ती हे देखील गावाला तांत्रिक मार्गदर्शन करतील. दरवर्षी गावाच्या अबंध निधीतून झालेली कामे, खर्चाची तपासणी आणि लेखाजोखा गावानेच करावयाचा आहे. त्याकरिता त्याची संपूर्ण माहिती ग्रामपंचायतच्या नोंदवहीत नोंद करून सूचना फलकावर जाहीर करणे अनिवार्य आहे. त्यामुळे गावात एकमेकांप्रति विश्वासाचे वातावरण निर्माण होऊन गाव विकासात सर्वांचा मनापासून लोकसहभाग मिळण्यास मदत होईल.

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