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Housing Conditions among Scheduled Tribes in Rural Madhya Pradesh: A Regional Analysis

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Abstract

A house is one of the three basic requirements of mankind. It also reflects the quality of life of the people. Generally, scheduled tribes have distinct socio-economic conditions. A tribe is in an ideal state, a self-contained unit and constitutes a society in itself. In this study an attempt has been made to analyze the housing conditions among scheduled tribes in rural Madhya Pradesh, a dominated state in the country. The study is based on district-wise census data for the year 2011. The study reveals that nearly 96 percent houses have been found occupied houses in the study area. More than three-fourth of occupied houses has been used as residences followed by other non-residential and residence cum-others etc. About 38 percent of houses have been observed in good condition, 56 percent in livable condition, and only nearly six percent have been found in dilapidated conditions. Finally, across the broad regions, the magnitude of the proportion of the condition of houses differs significantly in rural Madhya Pradesh. The maximum number of houses in good condition has been recorded in the eastern region, while the lowest has been found in the northern region. On the other hand, highest percentage of houses in livable and dilapidated condition has been observed in the northern region and the lowest in eastern region among scheduled tribes in the study area.

Keywords: Tribe, Scheduled tribes, Housing Condition, Good, Livable and Dilapidated Houses, Broad Regions

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Introduction

A house is one of the three basic requirements of mankind. Brunhes (1920) advocated that "the houses are the product of cultural tradition and natural conditions. It includes residential structures besides factories, shops, warehouses, schools, temples, mosques etc. It is one of the most essential human needs, providing a space for rest, sleep, and carrying out occupational activities". Finch and Trewartha (1946) suggested that "as a geographic element, 'the term 'house' encompasses not only dwellings house, ranging from humblest huts of the poor to the most elaborate and city mansions, but all other human structures as well, where people congregate or where their grains are stored, such as schools, warehouses, stores, factories, and churches etc.". Unni, (1965) described that "house is a social concept; its nature and cognition varying with caste, class, religion and region". Kniffen (1965) also highlighted that "a house is considered the most significant element of the cultural landscape within geographical literature. It reflects aspects such as cultural heritage, cultural styles, functional requirements, and both positive and negative influences from the non-cultural environment".

The researchers from different disciplines including economists, demographers and geographers have extensively explored the theme of rural dwellings. Geographers and other researchers have also conducted numerous studies examining the diverse uses and characteristics of rural dwellings related to scheduled castes and scheduled tribes over time. Scholars have defined the term 'tribe' from their own point of view. Majumdar (1961) defines the tribes as "a collection of families or groups bearing a common name, the members of which occupy the same territory, speak the same language and above certain taboos regarding marriage, profession or occupation, with a well-assured system of reciprocity and mutuality of obligations". Bardhan (1973) defined the tribe as a "course of a social-cultural entity at a definite historical stage of a development. It is a single endogamous community, with a cultural and psychological makeup going back in to a distant historical past". Beteille (1977) described two essential elements while defined the term as, "a tribe is in an ideal state, a self-contained unit. It constitutes a society in itself". Vidyarthi (1981) described that "tribe is a social group with definite territory, common name, common descent, common culture, behaviour of an endogamous group, common taboos, and existence of distinctive social and political system, full faith in leaders and self-sufficiency in their economy".

Singh, Rashmi and Bilas (2013) explore "the housing conditions, housing stocks and housing shortage in Uttar Pradesh. They identified that substantial proportion of the houses in the Uttar Pradesh is not in good condition during the period 2001-2011". Nazeer (2015) studied "the socio-economic characteristics of tribes in Tamil Nadu with special reference to the tribal belonging to the Malayalee community living in Pachamalai hills in Tiruchirappalli

district. He found that there is only a partial development in socio-economic conditions of the Pachamalai Hills tribal". Sharma and Roy (2016) studied "the socio-economic and demographic characteristics of Baigas, Bharias and Saharias, three most backward tribal communities of Madhya Pradesh. They observed that these three tribes are in a poor stage and primarily dependent on agricultural labour for their livelihood". Chamar and Seema (2016) studied "the housing conditions in rural India. They concluded that the maximum number of houses in good condition is found in the southern region, while the highest share of houses in livable condition is recorded in eastern region and the maximum percentage of houses in dilapidated condition is observed in north-eastern region of India". Prakash (2017) studied "the socio-economic and health background of the elderly tribes in Pachamalai Hills of Tiruchirappalli district of Tamil Nadu. He found that there is only partial development in their socio-economic conditions of the tribes and tribal elders are more prone to be affected by physical, economical and psychological problems in the Pachamalai hills".

After a year, Rajesh and Jayaraman (2018) studied "education quality of scheduled tribes in Panchamalai hills and found that the literacy rate of scheduled tribes is very low as compared to the general literacy rate. They also observed that people of the remote area are superstitious and addicted to blind beliefs. Hence, appropriate policies to be framed and implemented by the government to enhance their educational level". Recently, Chamar et. al. (2021) also studied "caste-wise rural dwellings and house types among social groups in Haryana. They found that among the social groups, the general caste population appears to be better off as compared to backward castes and scheduled castes in term of quality of house types. Households with comparatively better socio-economic conditions have own pucca houses in rural Haryana". In the same year, Dhanak and Chamar (2021) examined "the clan-wise distribution of rural dwellings, and house types based on building materials of the Chura caste in the Jhajjar district of Haryana. Based on primary data, they observed that the households with comparatively better socio-economic conditions have owned pucca houses among the Chura caste. The Geychand clan appears to be better off in terms of the quality of dwellings occupied while the Lauth clan occupied the lowest position on the ladder among the Chura caste in the Jhajjar district".

A very few studies have been carried out to examine the housing conditions, their quality of living space among the scheduled tribes at regional and country levels. Therefore, to fill this gap, the present study has been made to analyze the uses of census houses and their housing conditions among scheduled tribes in rural areas of Madhya Pradesh, a dominated state in the country.

Defined Census House

Census of India (2011) defined the term house as, "a building or a part of a building having

a separate main entrance from the road or common courtyard or staircase, etc., used recognized as a separate unit. It may be occupied or vacant. It may be used for a residential or non residential purpose or both"

Objective of the Study

The objective of the present study is to 'analyze the uses of census houses and housing conditions among scheduled tribes in rural Madhya Pradesh'.

Study Area

The state of Madhya Pradesh came into its present form on 1st November, 2000. It has nicknamed '*Heart of India*'. It is located between the latitudes of 21° 6' North to 26° 30' North and longitudes of 74° 9' East to 82° 48' East. It is the second-largest state in the country by area and sixth-largest in terms of population.

The present state of Madhya Pradesh comprises the parts of Udaipur-Gwalior region, Bundelkhand region, Vindhyanchal-Baghelkhand region and Malwa region as demarcated by Singh (1971). As per Census 2011, the total rural population of Madhya Pradesh is 525.57 lakh people (72.3 percent) of which 142.77 lakh person (27.16 percent) are scheduled tribe comprising 71.88 lakh males (50.35 percent) and 70.89 lakh females (49.65 percent). Madhya Pradesh has significant tribal population. Hence, every fifth person in Madhya Pradesh belongs to the scheduled tribes. The highest proportion of scheduled tribe population has been recorded in the Alirajpur district (93.43 percent), while the lowest rural population has been found in the Bhind district (0.11 percent) of Madhya Pradesh.

Data Source and Research Methodology

For the present research work, census data of 2011 with respect to houses, their uses and housing conditions among rural scheduled tribes' have been used. The housing conditions like good, livable and dilapidated at the district level in proportion to total rural scheduled tribes houses have been calculated in per cent. Further, the study area has been divided into four broad regions which represent the northern region (Udaipur-Gwalior region; 6 districts), northeastern region (Bundelkhand region; 3 districts), eastern region (Vindhyanchal-Baghelkhand region; 16 districts), and western region (Malwa region; 25 districts). Finally, tables and maps have been prepared with the help of the choropleth method by using the Arc GIS 10.1 (Arc MAP Version 10.1).

Results and Discussion

Census Houses and its Uses

The census provided the information about different uses for houses in rural Madhya Pradesh. The houses are classified into two major categories which are 'vacant houses' and 'occupied houses'. According to 2011 census, about 95.75 percent of rural scheduled

tribes houses were occupied houses in Madhya Pradesh. Among the occupied houses there are 10 sub-categories. It is measured that the maximum number of occupied houses have been used for residences (77.0 percent), followed by other non-residential (9.52 percent), residence cum-others (4.98 per cent), shop/office (1.44 percent) school/college (1.30 percent) and places of worship (1.01 percent). The categories like factory/workshop/work shed, locked houses, hospital/dispensary and hotel/lodge/guest houses each constitute less than one percent of the total rural houses (Table 1). The research has also identified the different uses of census houses at district level, which provide us different uses of census houses among scheduled tribes in rural Madhya Pradesh.

District-wise Census Houses and Its Uses among Scheduled Tribes

Table 2 indicates the district-wise different types of uses of census houses in rural Madhya Pradesh as per the Census 2011. The range of occupied houses across the districts varies from 91.60 percent houses in Indore district to Alirajpur district (98.05 percent). Notably, a very large range of occupied houses that is higher than 97 percent have been recorded in only nine districts. More than half of the districts have occupied houses above the average that is 95.75 percent.

The highest percentage of houses used in the category of residence has been found in the district of Morena (87.14 percent) followed by Rewa (85.11 percent) and Sidhi (84.39 percent), Narsimhapur (83.97 percent) and Umaria (83.76 percent) etc. also have a substantial proportion of houses used for residence. On the other hand, the lowest proportion of residence has been recorded in this category in Alirajpur district (36.49 percent) and followed by Jhabua (56.12 per cent). Nearly one-third of the total districts have more than 80 percent of houses dedicated to the category of residence. Very large share in the category of residence-cum-other houses has been found in the districts like Alirajpur (52.38 percent), Jhabua (32.49 percent), Rajgarh (18.29 per cent) and Shajapur (10.10 percent), while a very small proportion of houses found in this category has been recorded in district of Sheopur (1.06 percent) followed by Neemuch (1.31 percent), Burhanpur (1.52 percent) and Dindori (1.59 percent) etc.

Likewise, comparatively a very large proportion of houses which is more than 2.0 percent found in the category of shop/office have been observed in Bhopal (2.35 percent), Burhanpur (2.32 percent), Neemuch (2.08 percent), Mandsaur (2.08 percent), Harda (2.05 percent) and Hoshangabad (2.02 percent). While the smallest proportion has been recorded in Morena district (0.65 percent) and followed by the districts of Bhind (0.73 percent), Rewa (0.95 percent) and Alirajpur (0.98 percent) etc. The largest proportion of houses in the category of other non-residential has been recorded in the district of Dindori (20.90 percent) followed by Sehore (15.32 per cent), Mandla (15.13 percent) etc. On the other hand, the smallest share of houses recorded in the same above category has been found in the

district of Jhabua (4.34 percent) followed by Alirajpur (4.84 percent) and Sidhi (4.89 percent) etc.

**Table 1: Rural Madhya Pradesh
Distribution of Census Houses and its Uses among Scheduled Tribes, 2011**

Sr. No.	Use of Census Houses	Number of Houses	Per cent
Total Census Houses		1,34,53,987	100.00
1.	Occupied Census Houses	1,28,82,637	95.75
2.	Vacant Census Houses	5,71,350	04.25
Categories of Occupied Census Houses		Number of Houses	Per cent
1.	Residence	1,03,60,677	77.00
2.	Residence-cum-other	6,70,297	04.98
3.	Shop/Office	1,93,537	01.44
4.	School/College	1,74,516	01.30
5.	Hotel/Lodge/Guest houses	12,620	00.09
6.	Hospital/Dispensary	15,839	00.12
7.	Factory/Workshop/Work shed etc.	21,787	00.16
8.	Place of Worship	1,35,495	01.01
9.	Other Non-Residential	12,80,912	09.52
10.	Locked Houses	16,957	00.13
Total Occupied Census Houses		1,28,82,637	95.75

Source: Compiled by Authors.

The sub-category of 'others', that includes schools/colleges; hotels/lodges/guests houses; hospitals/dispensaries; factory/workshops/work sheds; places of worship, and locked houses have been shared by approximately three percent of the total rural scheduled tribes' houses in Madhya Pradesh. It appears that Betul district (3.76 percent) has the highest proportion of occupied houses. It has been followed by the districts of Chhindwara (3.73 percent), Dewas (3.46 per cent) and Vidisha (3.46 percent) etc. while the smallest proportion has been observed in the districts of Rewa (1.98 percent), Chhatarpur (2.00 percent), Morena (2.03 percent) and Tikamgarh (2.07 percent) etc.

Region-wise Census Houses and their Uses

Across the broad regions, the uses of occupied census houses differ significantly among scheduled tribes in rural Madhya Pradesh. In the category of residence, the highest number of houses has been recorded in northern region (81.11 percent) followed by eastern region (80.21 per cent) while the lowest has been found in western (73.70 percent) region. Likewise, other non-residential houses have been observed in north-eastern (12.08 per cent), and the lowest proportion has been found in the eastern (8.43 percent). Similarly, the residential-cum-other has been concentrated in western region (7.17 percent), while the lowest proportion in the same-category has been observed in northern region (2.36 percent). The maximum concentrated in the category of shop/office houses has been recorded in western

region (1.57 percent) followed by eastern region (1.35 percent), and north-eastern (1.33 per cent) region and the lowest share in the same category has been observed in northern (1.20 percent) region of Madhya Pradesh. It may also be noted that the maximum concentration of occupied houses in the sub-categories of schools/colleges; hotels/lodges/guest houses; hospitals/dispensaries; factories/workshops/work shed; places of worship and locked houses has been observed in western region (3.08 per cent) and smallest share has been recorded in northern region (1.42 percent) among scheduled tribes in rural Madhya Pradesh (Table 3). The district-wise spatial variations in the housing conditions among scheduled tribes in rural Madhya Pradesh are presented as under:

**Table 2: Rural Madhya Pradesh
District-wise Various Census Houses and their Uses among Scheduled Tribes, 2011**

District Code	Name of the District	Vacant Census Houses	Occupied Census Houses	Major Categories of Occupied Census Houses				
				Residence	Residence-Cum other	Shop/Office	Other-non-residence	Others
418	Sheopur	4.67	95.33	81.77	01.06	1.74	2.28	8.48
419	Morena	2.00	98.00	87.14	02.11	0.65	2.03	6.07
420	Bhind	2.97	97.03	79.37	03.10	0.73	2.57	11.26
421	Gwalior	3.65	96.35	79.46	02.93	1.68	2.93	9.36
422	Datia	3.13	96.87	74.74	03.69	1.08	2.53	14.82
423	Shivpuri	4.40	95.60	80.46	01.72	1.62	2.46	9.34
424	Tikamgarh	5.18	94.82	76.68	01.68	1.39	2.07	12.99
425	Chhatarpur	5.44	94.56	76.34	02.82	1.24	2.00	12.16
426	Panna	4.24	95.76	78.41	02.69	1.39	2.47	10.80
427	Sagar	4.21	95.79	80.53	02.88	1.43	2.82	8.13
428	Damoh	4.55	95.45	79.31	02.66	1.44	2.61	9.42
429	Satna	4.25	95.75	79.89	03.93	1.20	2.48	8.24
430	Rewa	2.87	97.13	85.11	03.25	0.95	1.98	5.84
431	Umaria	3.30	96.70	83.76	03.07	1.31	2.70	5.86
432	Neemuch	6.07	93.93	73.10	01.31	2.08	3.30	14.14
433	Mandsaur	5.36	94.64	72.95	02.65	2.08	3.37	13.59
434	Ratlam	4.68	95.32	72.02	06.81	1.61	3.14	11.75
435	Ujjain	5.15	94.85	72.40	06.13	1.92	3.12	11.29
436	Shajapur	4.36	95.64	67.54	10.10	1.48	3.20	13.32
437	Dewas	4.57	95.43	75.15	04.79	1.33	3.46	10.70
438	Dhar	4.92	95.08	72.14	09.89	1.52	3.06	8.47
439	Indore	8.40	91.60	73.52	02.80	1.84	3.18	10.27
440	West Nimar	5.09	94.91	77.24	02.88	1.47	2.85	10.47
441	Barwani	3.76	96.24	76.12	05.45	1.18	3.08	10.41
442	Rajgarh	3.15	96.85	68.50	18.29	1.03	2.69	6.34
443	Vidisha	3.54	96.46	75.01	03.64	1.59	3.46	12.75
444	Bhopal	8.23	91.77	73.25	02.88	2.35	3.37	9.91
445	Sehore	3.90	96.10	73.13	03.12	1.89	2.65	15.32
446	Raisen	3.23	96.77	77.77	06.30	1.32	3.06	8.32
447	Betul	5.32	94.68	77.00	03.58	1.42	3.76	8.92
448	Harda	4.74	95.26	75.12	02.54	2.05	2.78	12.76
449	Hoshangabad	4.22	95.78	79.21	02.88	2.02	3.06	8.60
450	Katni	5.00	95.00	80.56	03.54	1.68	2.76	6.46
451	Jabalpur	4.06	95.94	82.92	02.92	1.46	2.43	6.22
452	Narsimhapur	3.06	96.94	83.97	3.60	1.24	2.28	5.84
453	Dindori	2.07	97.93	71.85	1.59	1.02	2.58	20.90
454	Mandla	2.84	97.16	74.88	2.81	1.35	2.99	15.13
455	Chhindwara	5.62	94.38	76.51	2.80	1.61	3.73	9.73
456	Seoni	3.75	96.25	75.88	5.80	1.66	3.26	9.65
457	Balaghat	3.33	96.67	79.88	4.01	1.64	2.81	8.33
458	Guna	2.85	97.15	82.23	3.76	1.21	2.75	7.20
459	Ashoknagar	2.93	97.07	80.14	3.28	1.35	2.91	9.39

**Table 3: Rural Madhya Pradesh
Region-wise Census Houses and its Uses among Scheduled Tribes, 2011.**

Sr. No.	Uses of Census Houses	Madhya Pradesh	Northern	North Eastern	Eastern	Western
		Per cent				
1.	Occupied Census Houses	95.75	96.60	94.97	96.03	95.47
2.	Vacant Census Houses	04.25	03.40	05.03	03.07	04.53
Uses of Occupied Census Houses						
1.	Residence	77.00	81.11	77.01	80.21	73.70
2.	Residence-cum-others	04.98	02.36	02.40	03.36	07.17
3.	Shop/Office	1.43	1.20	1.33	1.35	1.57
4.	School/College	1.29	0.95	0.94	1.26	1.46
5.	Hotel/Lodge Guesthouses	0.09	0.08	0.07	0.09	0.10
6.	Hospital/Dispensary	0.11	0.11	0.10	0.11	0.13
7.	Factory/Workshop/Work shed	0.16	0.10	0.11	0.17	0.18
8.	Place of Worship	1.00	1.07	0.80	0.91	1.09
9.	Other Non- Residential	9.50	9.50	12.08	8.43	9.95
10.	Locked Houses	0.12	0.11	0.13	0.14	0.12
Rural Madhya Pradesh		95.75	96.60	94.97	96.03	95.47

Source: Compiled by Authors.

Housing conditions

Housing condition is one of the important indicators of the socio-economic development of the country. Statistical information relating to housing conditions in quantitative terms is essential for an assessment of the overall housing needs of the people and also for the formulation of housing policies and programs. Thus, a regular flow of reliable data on housing conditions has assumed great importance for the government and planning bodies to enable them to give proper attention to various housing problems of the day. Census of India (2011) has classified the houses into three categories like (i) Good; (ii) Liveable; (iii) Dilapidated) and described as follows;

(i) Good Condition Houses

Those houses which do not require any repairs and in good condition may be considered as 'Good'.

(ii) Livable Condition Houses

Those houses which require minor repairs may be considered as 'Livable'.

(iii) Dilapidated Condition Houses

Those houses which are showing signs of decay or those breaking down and require major repairs or those houses decayed or ruined and are far from being in conditions that can be restored or repaired may be considered as 'Dilapidated'.

Table 4 indicates the housing conditions among scheduled tribes in rural Madhya Pradesh. As per 2011 census, it is observed that 37.71 percent of houses are in good condition, 56.31 percent are in livable condition; and only 5.98 percent are found in dilapidated conditions out of total houses. The percentage of housing condition in the study area is also represented with the help of Pie diagram (Fig. 1).

**Table 4: Rural Madhya Pradesh
Housing Condition among Scheduled Tribes, 2011**

Sr. No.	Housing Condition	Total Households	Per cent
1.	Good	1119770	37.71
2.	Livable	1671794	56.31
3.	Dilapidated	1,77,531	05.98
Total Households in Rural Madhya Pradesh		29,69,095	100.00

Source: Compiled by Authors.

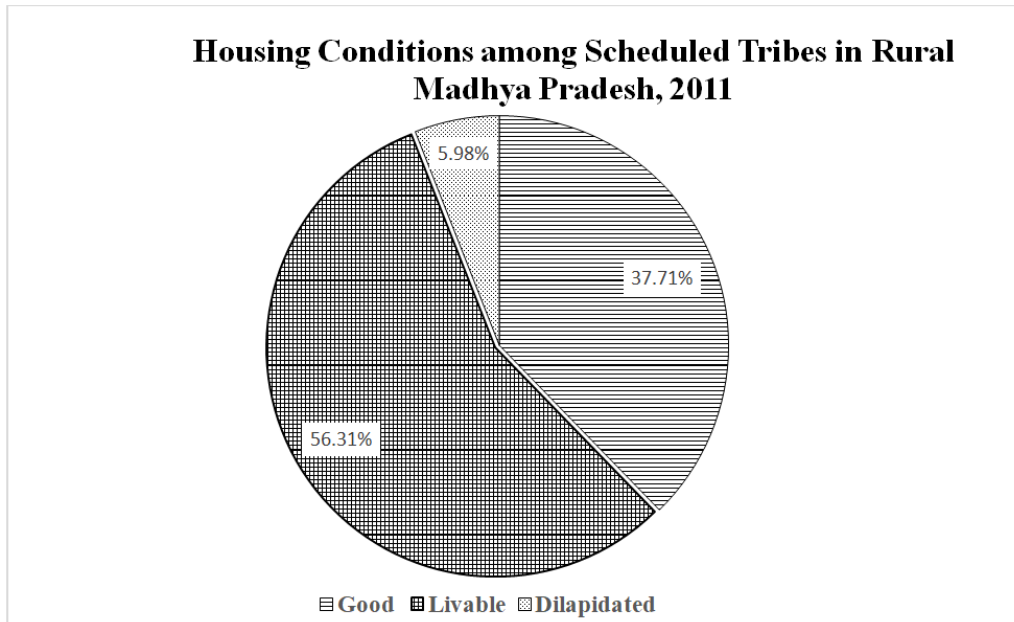


Fig. 1

The above mentioned condition of rural houses among scheduled tribes at district level in Madhya Pradesh has been described as under;

District Level Pattern of Good Condition Houses

Out of the total rural houses, about 11.20 lakh houses (38 percent) have been recorded in the category of good condition among scheduled tribes in Madhya Pradesh. Across the districts, the good-condition houses vary from 60.04 percent in Anuppur district to 18.84 percent in Shivpuri district. It appears that a large to very large proportion of good-condition houses (more than 40 percent) has been found in 12 (24 percent) districts. Besides the district of Anuppur, the districts such as Mandla, Sidhi, Balaghat, Rewa, Shahdol, Singrauli, Dindori, Satna, Umaria, Seoni and Betul fall in this category. It may be noted that except the district of Betul, all are located in the eastern region. The moderate level of good condition houses (35.01-40.00 per cent) have been found in only five districts namely Katni, Jabalpur, Burhanpur, Chhindwara and Raisen. Particularly noting that a smaller proportion of good-condition houses (30.01-35.00 per cent) has been observed in 14 districts and mostly confined to western region of Madhya Pradesh. The districts registering less than 30.01 percent (very small level) has been recorded in about two-fifth of the total districts (Table 5). The smallest proportion of good-condition houses has been recorded in the district of Shivpuri (18.80 percent) and followed by the districts of Sheopur (20.98 percent), Gwalior (21.45 percent), Morena (23.17 (percent), and Rajgarh (24.80 percent) etc. Except the Damoh district, all are confined to northern and western region of the study area (Fig. 2).

District-Level Pattern of Livable Condition Houses

Out of 29.69 lakh of the total rural houses among scheduled tribes in Madhya Pradesh, more than 56 percent (16.71 lakh) houses have been observed in the category of livable condition. Across the districts, the livable condition houses vary from 70.78 percent in Shivpuri district to 38.05 percent in Anuppur district among scheduled tribes in Madhya Pradesh. It is interesting to note that there is a vice-versa situation observed in the district when it comes to the highest and lowest proportion of houses in the category of 'livable' and 'good condition'. A large to very large proportion of livable condition houses (more than 60 percent) has been recorded in more than two-fifths of the total districts. The highest percentage has been found in the district of Shivpuri and followed by Sheopur, Ratlam, Khargone (West Nimar)Ujjain etc. It has been noticed that except the two districts namely Damoh and Panna, all are confined to northern and western regions of the study area.

A moderate level of livable condition houses (55.01 to 60.00 percent) has been recorded in about one-fourth of the total districts and more than half of the districts are confined to only western region. It is noteworthy that a significant proportion of districts small to very small proportion of livable condition houses (less than 55.01 percent) has been observed in nearly one-third of the total districts (Table 6) and mostly confined to western region of

Madhya Pradesh. It appears that the smallest percentage of livable condition houses has been found in the district of Anuppur and followed by the districts of Balaghat and Mandla etc. Further, it has been noticed that except the districts of Bhind, Raisen and Betu, rest of all the districts in this category confined to eastern region of the Madhya Pradesh (Fig. 3).

District Level Pattern of Dilapidated Condition Houses

Based on the census 2011, nearly six per cent of the total number of rural scheduled tribes houses (1.77 lakh) have been recorded in dilapidated condition in Madhya Pradesh. Among the districts, the dilapidated condition houses vary from 18.55 per cent in Bhind district to 1.91 per cent in Anuppur district. The data reveals several significant findings: A Large to very large proportion of dilapidated condition houses specifically (more than 9 per cent) is found in about two-fifth of the total districts in Madhya Pradesh (Table 7). Among the districts, highest percentage has been recorded by Bhind (18.55 per cent) followed by Datia (14.82 per cent), Hoshangabad (14.17 per cent), and Sehore (14.10 per cent) etc. It may be noted that except the two districts like Narsimhapur and Tikamgarh, all the district fall in this category confined to northern and western regions of the study area.

The moderate level of dilapidated condition houses (6.01 to 9.0 per cent) has been found in 10 districts. The districts such as Damoh, Chhatarpur, Khargone (West Nimar), Jabalpur, Neemuch, Ujjain, Guna, Burhanpur, Mandsaur and Katni fall in this particular category. Only Chhatarpur district located in north-eastern region; Damoh, Jabalpur and Katni and rest of the districts confined to eastern region and eastern region respectively. The small proportion of dilapidated condition houses (3.01 to 6.0 percent) has been covered slightly less than one-third of the districts and except the district of Panna all are confined to eastern and western regions of the rural scheduled tribe population of Madhya Pradesh. (Fig. 4). On the other hand, the smallest percentage of dilapidated condition houses has been observed in the district of Anuppur (1.91 (percent) followed by the districts of Singrauli (1.98 percent), Sidhi (2.27 percent), and Dindori (2.27 per cent) and all the four districts located in eastern region of Madhya Pradesh.

**Table 5: Madhya Pradesh
Good Condition of Rural Houses among Scheduled Tribes, 2011**

Level of Houses	Houses (per cent)	No. of Districts	District (per cent)
Very Large	More than 45.00	09	18
Large	40.01-45.00	03	06
Moderate	35.01-40.00	05	10
Small	30.01-35.00	14	28
Very Small	Less than 30.01	19	38
Rural Madhya Pradesh	37.71	50	100.0

Source: Compiled by Authors.

**Table 6: Madhya Pradesh
Livable Condition of Rural Houses among Scheduled Tribes, 2011**

Level of Houses	Houses (per cent)	No. of Districts	District (per cent)
Very Large	More than 65.00	05	10
Large	60.01-65.00	16	32
Moderate	55.01-60.00	13	26
Small	50.01-55.00	08	16
Very Small	Less than 50.01	08	16
Rural Madhya Pradesh	56.31	50	100.0

Source: Compiled by Authors.

**Table 7: Madhya Pradesh
Dilapidated Condition of Rural Houses among Scheduled Tribes, 2011**

Level of Houses	Houses (per cent)	No. of Districts	District (per cent)
Very Large	More than 12.00	09	18
Large	9.01-12.00	12	24
Moderate	6.01-9.00	10	20
Small	3.01-6.00	15	30
Very Small	Less than 3.01	04	08
Rural Madhya Pradesh	05.98	50	100.0

Source: Compiled by Authors.

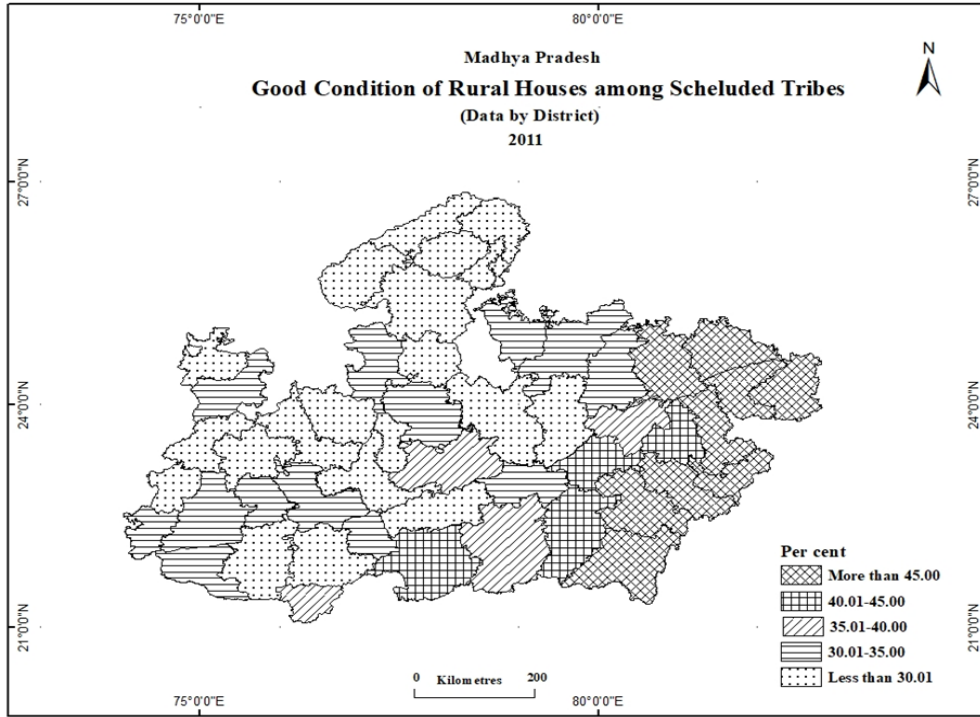


Fig. 2

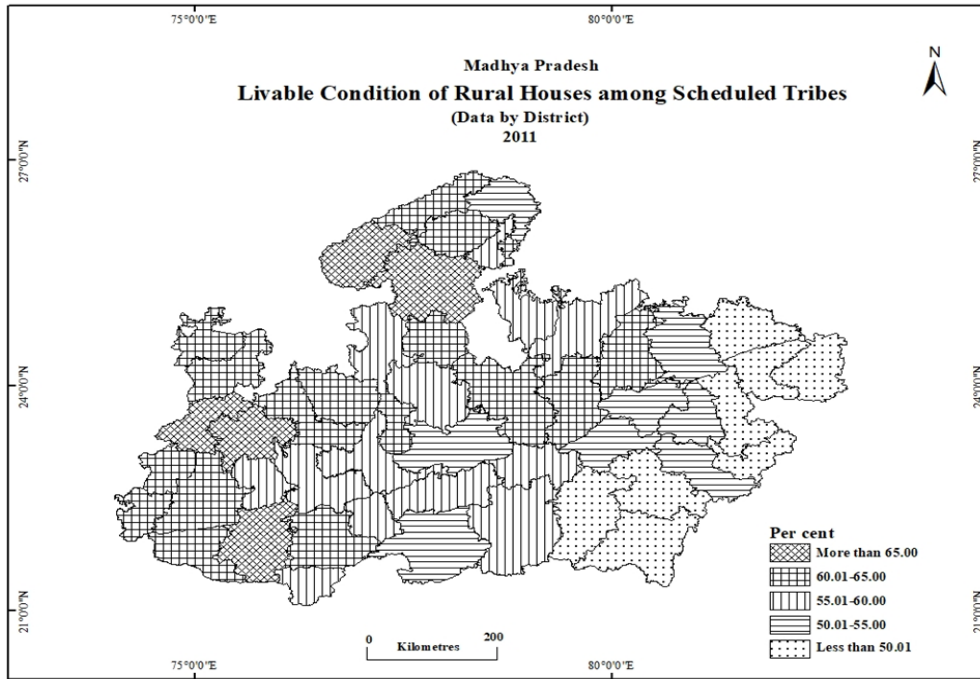
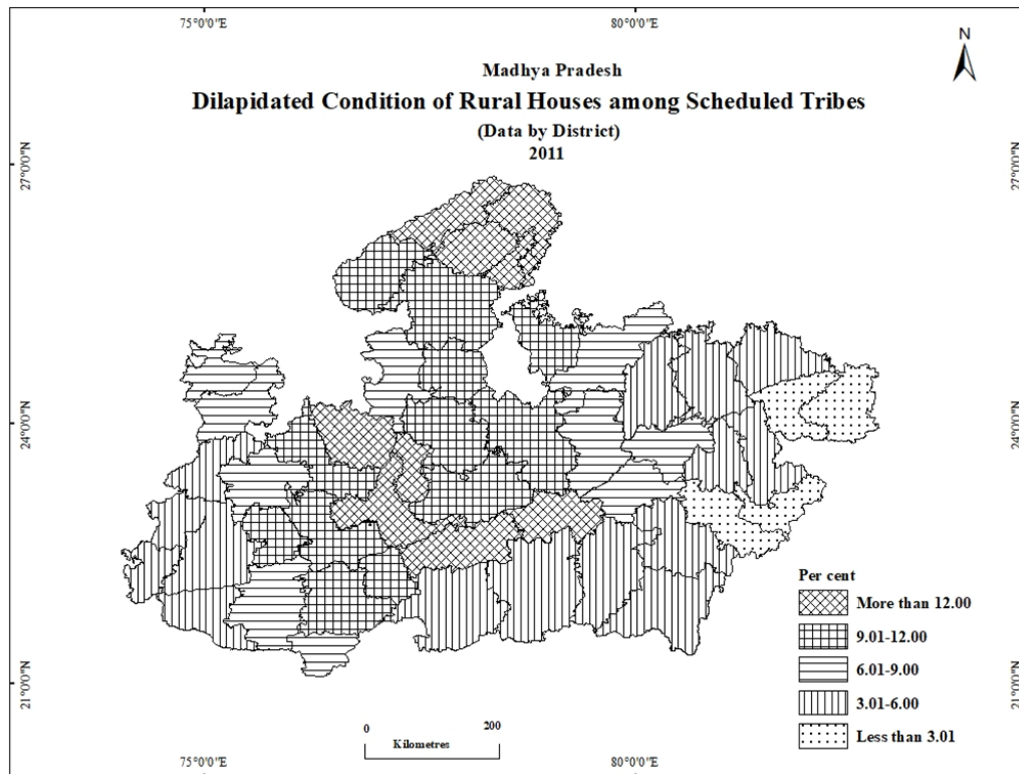


Fig. 3

**Fig. 4****Region-wise Housing Conditions**

Across the board regions, the housing condition differs significantly among scheduled tribes in rural Madhya Pradesh. The information reveals that the largest percentage of good-condition houses has been recorded in the eastern region followed by north-eastern region, while the smallest percentage of houses in this category has been found in northern region in the study area (Fig. 5). This suggests that, in the eastern part of the study area, a significant proportion of houses are in good condition, reflecting well-maintained housing infrastructure. The highest percentage of houses in livable condition is observed in the northern region. This is followed by the north-eastern region, western region and eastern region respectively (Fig. 6). The data reveals a substantial variation in the proportion of houses in dilapidated condition also varies significantly from region to region. The highest percentage of dilapidated conditions has been found in the northern region, followed by the western region in rural Madhya Pradesh (Fig. 7; and see also table 8).

Conclusions

It is summarized that nearly 96 percent of houses in rural Madhya Pradesh are found occupied in 2011, including a high rate of housing occupancy. More than three-fourths of

occupied houses have been used as residences followed by other non-residential, residence cum-others and shop/office. Apart from residences, other common uses of occupied houses included nearly one percent of houses are identified as places of work ship. About five percent of houses have been recorded as 'residences-cum-other' in rural Madhya Pradesh. Sub-categories such as 'school/college, factory/workshop/work shed, locked houses, hotel/lodge/guest houses, and hospital/dispensary' each account for less than one percent of rural houses among scheduled tribes. In terms of housing conditions, about 38 percent of houses are observed in good condition, 56 percent in livable condition, and nearly 6percentare in dilapidated condition.

Across broad regions, this regional variation highlights the diversity in housing quality and living conditions. The maximum number of houses in good condition has been recorded in the eastern region, indicating a relatively better part of the study area, while the lowest has been found in the northern region. Conversely, the highest percentage of houses in livable condition has been observed in the northern region and the lowest in the eastern region. The magnitude of the proportion of houses in dilapidated condition also varies significantly. The highest percentage of houses in dilapidated condition has been found in northern region and the lowest in eastern region among scheduled tribes in the study area.

**Table 8: Madhya Pradesh
Region-wise Rural Housing Conditions among Scheduled Tribes, 2011.**

Selected Regions	Total Rural Houses	Housing Condition		
		Good	Livable	Dilapidated
Northern	101369	20669	69686	11014
(Per cent)	100.00	20.39	68.74	10.87
Northeastern	68720	23047	40982	4691
(Per cent)	100.00	33.54	59.64	06.82
Eastern	1312753	603882	649925	58946
(Per cent)	100.00	46.00	49.51	04.49
Western	1486253	472172	911201	102880
(Per cent)	100.0	31.77	61.31	06.92
Madhya Pradesh	2969095	1119770	1671794	177531
(Per cent)	100.00	37.71	56.31	05.98

Source: Compiled by Authors.

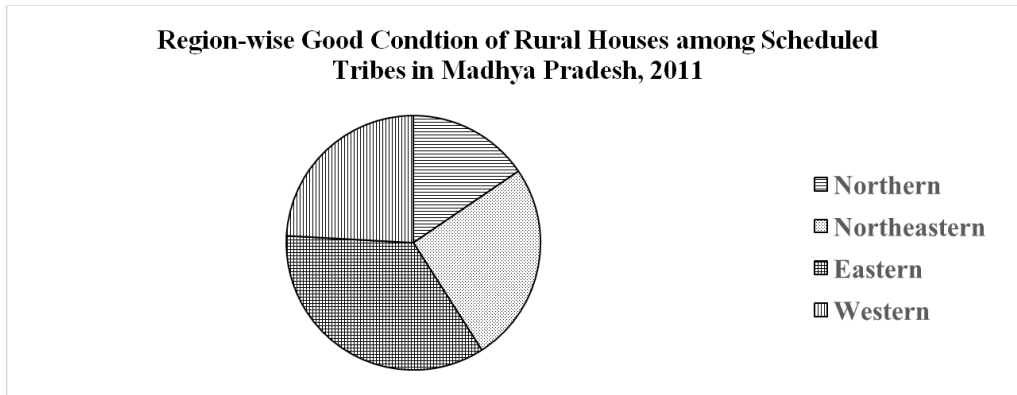


Fig. 5

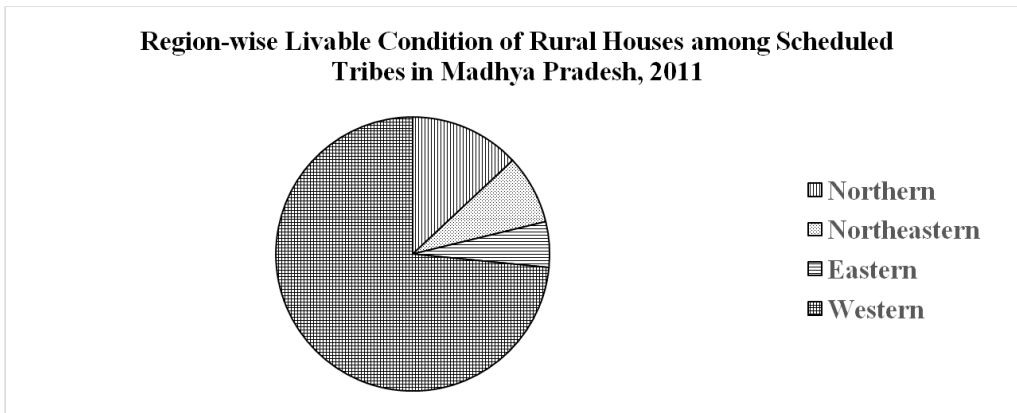


Fig. 6

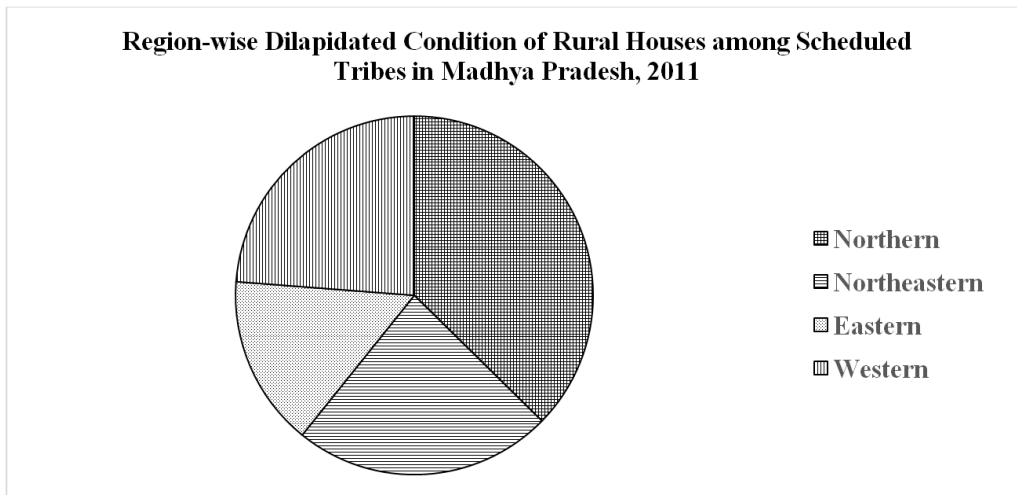


Fig. 7

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Edna : Nascent Self to Narcissism

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Abstract

The heroine of "*The Awakening*" by Kate Chopin has been under critical glance since its publication; the narrative has triggered a debate about status of Edna-a victim, heroine or an adulterous. Edna is unconventional to defy her social, conventional status; she is conventional, not to express herself in audible term with a frequency which could resonate with conventional constraints of society. She is not an adulterous as Chopin shows her flirtation but not her well defined sexual indulgence as shown in her unpublished story - 'The Storm'. She is not a victim as she strives, struggle and succumbs to the sea, but by choice; she is not a heroine as she fails to show heroic virtues. Some are the issues beyond resolution and always welcome fresh debates. Edna fails to articulate her inhibition, her anger, her pent-up feelings but she creates a sound and ripples of which can be felt by the modern readers. The progression of paper will show how Edna travels an itinerary from a secure home to dangerous shore of the sea.

Keywords: Conventional, Constraints, Resolution, Inhibition, Ripples

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Introduction

The heroines of "The Awakening", Edna Pontellier traverses a long journey from an elite, safe, secure background, with father and husband, dangerous sea; she also traverses a long journey from nascent self to narcissism.

Her suicide is read as "defiant act of... and also as a maternal longing ..." (Wymard 375).

The novel mediates possibly the extremes of Edna sometimes pathetic, other times tragic as Edna tries to confront but not balance the outer as well inner threats for acquisition of selfhood.

The title 'awakening' is not fully justified as it is noticeable how Edna is hypnotized by romantic fantasy, unmindful of world around and responsibilities with in. She harbours a dream of independence and self-will in life after her triumph in the sea, in her swimming enterprise. This dream lacking potency and possibilities leads her to destruction.

Cynthia Wolff finds Edna recoiling to her childhood to forget her present and to avail herself again the care-free nature of a child, secure with mother, free from accountability and punishment. Edna has "Infantile and regressive traits in Edna" (Wolff 450).

This view converts Edna's struggle of universal scale into a pathological problem. Edna thus becomes a "psyche figure; it is more clear that heroism is necessary for the nascent self to resist the lure and power of the unconscious" (Franklin 510).

In the tale of Psyche, she is shown struggling against all odds and confronts the challenges. She is lured by suicide various times but she resists the temptation and ultimately, happily married to Eros to beget a child 'joy'.

Psyche is elevated to the realm of the immortals she applies ointment to attract Eros which induces death like sleep and Eros thus pleased removes the ointment and they worry ... (Manheim 50)

Like Psyche, Edna too struggles with her unconscious mind and her unconscious struggle is the core and charm of the tale. The threatening and accelerating growth of mortal and fragile consciousness of Edna is juxtaposed with social expectation. Edna is neither able to resist the reductive lure of unconscious nor she makes arrangement to counter check social pressure.

Separation and solitude test her resolve for individuation and along with the difficulty of the tasks, threaten to overwhelm her. Psyche's attempt at suicide mark these impulses to return to unconscious positivity. Edna experiences all of psyche's difficulties ... her sexual and self awakening ... the paradigm of myth illuminates the significant action, characters and symbols of her complex psychological struggle. (Franklin 512)

Edna is an intrusion as an aware women in assembly of hypnotized women as one who possesses a consciousness of her individual status that she seems to thwart and uproot the comfortable unconsciousness of women about their status quo not only as a feeling but also as an intellectual human to live by her choice, her standard as men do. Robert stirs the controlled impulses of Edna and awakens her to believe in herself. Both Robert and Edna are "portrayed in a narcissistic stage of development neither has suffered nor lived without the security of culture" (Wolff 455).

Edna finds in Robert not a man for erotic pleasures rather she finds him as an extension of herself. Robert helps her as a friend and there is no intimacy between the two beyond the limit of decency. Edna's time understood the relationship between a man and women only in conjugal context and disapproved novel idea of friendship between male and female without any mischief. Robert liked Edna for her distinct personality to evolve, to school herself and to learn every hour with self-responsibility like men. In today's world women do follow the code of friendship and also admit that the relationship with man and woman can be sensible, intellectual and healing. Edna get no comfort from her relations, her friends her sisters, no female was friendly to her to console and counsel her in her grief of disrespect from family. Her husband could not ventilate or redress her agony, disrespect, ignorance and indifference she received from her father and sisters; Robert too could not provide her succor and support when she was trying to carve out a niche of her own making, he announced his love for her but in her rejection, he left leaving her alone with one agony of disgrace by husband and and other torment of unrequited platonic love.

Edna's mental faculties were unhinged by the withdrawal of Robert as in such withdrawal, she lost her friend, philosopher and guide and was so disturbed and stupefied that she permitted promiscuous, notorious Alcee Arobin in her life as a slave or as a prop to lean on when her backbone, made up of family & friends was broken.

Edna is infatuated with Robert she has projected her sudden awakening animus upon Robert, fails to notice that she is transgressing the social limit which even the most unconventional Madame Reisz understands. She counter-checks Edna when latter carelessly states that love is not a selection but spontaneous. She states : You are purposely misunderstanding me, madam. Are you in love with Robert when you are not supposed to be? (Chopin 965).

Edna's idealism for innovation lends her a child like innocence but she being an adult, can not be immature to be a child.

Though she has experienced sexual initiation through being a mother, she has psychically extended her girlhood ... a woman virtually without an adult past, her most vivid memory is of walking as a little girl through the high meadows of Kentucky. (Bettelheim qtd. in

Franklin 515)

Edna is inspired by, infatuated with men since childhood but never in erotic terms. She was infatuated with sad-eyed cavalry man, with Robert as she wanted to be like them - independent self - sufficient, self - absorbed, self - confident and composed. Edna sought happiness out of her 'self' as she was not strong enough to stand on her own stamina.

Chopin reveals the mental upheaval of Edna :

The thought of him (Robert) was like an obsession ... ever pressing itself upon her. She didn't recall any special or peculiar way of his personality. It was his being, his existence which dominated her though. (936)

Edna in her lack of confidence, used to hang on people whom she found superior in accomplishment; for instance, she was infatuated with cavalry man for his sartorial elan; with Reisz for her music accomplishment; with Adele Ratignolle for her cherry-like lips and divine beauty; with Robert for his patience, mentor like care and share; with Alcee for his talent to teach her making money at race-course, to enable her to raise her own income, make her own niche. Edna wanted to grow like them, to live by her choice, to live without bondage but with bond she expressed her feelings to herself. "I felt as if I must walk on forever, without coming to the end of it" (Chopin 896).

The way, Edna was attached with her chosen persons, she was not attached with her husband. She had no bonhomie or lovable relationship with her husband, she in marriage had an "unaccountable satisfaction that no trace of passion or excessive and fictitious warmth colored her affection thereby threatening its dissolution" (Chopin 898).

Edna here, is found hopeless and helpless in love; like Kamla Das she sought love out of home; she was not from a deprived home also not from a disturbed home but from a detached home where people performed all rituals of life lifelessly. The regimentine regimen resided in rear realms of her house which trained her to comply outwardly with momentous, mammoth mass of inward dissent. Disapproval digresses into dissent and dissent deviates into detrimental decisions and Edna made her decision to drown herself to restart her life a new, a fresh.

Edna rejected her past - her natal family, her husband and also her future - her children. She retained her present and in very clean and clear state of a new refuge in the warm womb of sea mother.

Narrator also reveals her existential tension :

The past was nothing to her; offered no lesson which she was willing to need ... the present alone was significant, was hers, to torture her as it was doing then with the biting which her impassioned newly awakened being demanded. (Chopin 927)

Edna's nascent self provoked her unconscious in her reveries, sleep and hopeless ennui and manifest itself in her consciousness when she felt thousand emotions but fails to comprehend even one of them. Edna's burden on unconscious, her lack of expression, apathy or preaching of kinsmen further aggravated her affliction moving "her to dreams, to thoughtfulness, to the shadowy anguish which had overcome her the midnight when she had abandoned herself to tears" (Chopin 893).

Here, the narrator has registered the insecurity of Edna over her depletion, denigration of her soul, her awareness into menial task fit for animals. Edna gained nothing but unearthed the idea of liberation and individuality to women. Chopin asserts in the novel that the couple hardly talk, Edna's husband confides in doctor that they meet at breakfast table; Edna also shares with her friend that they have nothing to talk about Edna's failure in conversation with her husband is due to his admonishing tone and temper; Chopin has shown him chiding Edna either for neglect of her beauty. He said : "you are burnt beyond recognition" (Chopin 9) or for want of child care or for business evening or for change of house; his tones are never conciliatory or conducive or complimentary. Robert scooped her out of her slumber and awakened her to her confidence; her nascent self is an extension of her self-respect and self-love and its gradual awareness detached her from those who craved her presence at expense of it. Edna realized her individual status, power and refused to submit before securities of hard i.e. social institutions - marriage. She rejected drudgery of life, its routine, its consuming and corrosive discipline that curtailed mental energy of individuals. Edna reflects and Chopin reveals her psychic release :

But the beginning of things, of world especially, is necessarily vague, tangled, chaotic and exceedingly disturbing. How few of us ever emerge from such beginning! How many souls person in its tumult. (Chopin 21)

The use of 'US' here highlights universal and heroic stance of Edna; she connected herself to the cosmos and regrets how people live a conventional, conscripted, curtailed and die without realizing human worth and immense capacities invested into it. Edna undertook a difficult journey for herself and made it more difficult by her unusual stance unfit for her gender. Edna's quest was to fathom her human potential, her freedom of expression, her choice in her sexuality and acquiring her strength. Even Chopin finds journey and goal of Edna too much cumbersome for her :

Mrs. Pontellier was beginning to realize her position in the universe as a human being ... this may seem like a ponderous weight of wisdom to descent upon the soul of a young woman ... more wisdom than the holy host ... (Chopin 15)

Edna enjoyed liberated aura of Creole culture. Her individuation to explore her choice and execute her ideology is gradual, grievous and gruesome. Her swimming alone and too far

accorded her inflation in her power to exert, to lose herself just to explore herself.

Her nascent self, here tilts towards narcissism as she thinks only of herself as a single unit and entity even when she is married and entrusted with mighty duty of two male children whom she should teach masculinity alongwith the tendencies she appreciates in a man. She behaves like an unresponsive and irresponsible teenager who craves to join the portals of romance; her ideology is regressive and her evolution gradually leads to devolution. Edna regresses from twenty-eight years old mother to a romantic teenager; from teenager to a nude, newborn babe who prefers security in womb of sea-mother over human pleasure in accepting challenges of life and counter balancing incoherent forces of life.

Edna indulges herself narcissistically. Robert is only her faithful servant, childishly gratified to discover her appetite ... Edna avoids the sun and enjoys a sensuous lack of care as she has never allowed herself. (Franklin 518)

Edna fails to differentiate between her awakening of self and awakening of latent sexuality; for Edna it is psychologically detrimental to distinguish between her realization of self or merging with the selves of Robert or Alcee who initiated aroused her self confidence and sexuality respectively.

Robert made her realize her self-worth and boosted her morale to fend for herself alone in vast sea of life. When Robert leaves Edna she misses his company but her strength is revived and she declares : "I would give my life for my children; but I would not give myself ... I am beginning to comprehend, which is revealing itself to me" (Chopin 929).

Edna also feels that life of her friend, Adele is full of blind contentment and of a colorless existence. She wants to drink the delirium of life - the full taste of life as men do. Edna denounces the animalistic life imposed on women. She wants to add productivity to her life and wants to earn, to carve out her social and spiritual space. Edna views life as "a grotesque pandemonium and humanity like worms struggling blindly toward inevitable annihilation" (Chopin 12).

Edna ludicrous and dangerous mood swings reflects on her tumultuous frame of mind and her unhinged mental faculties. Her ennui results in anguish and anxiety which further deteriorates her and leads her to a nowhere land. Edna's quest of her latent capabilities deeply press upon her psyche to try forbidden avenues and upto such extent that her self explorations transforms itself into narcissism.

Edna wants to have her cake and eat it too. She is reluctant to give up her jewels and expensive dresses; she is keen to try love beyond the bounds of conventions; she is also eager to enjoy and embrace fame and applause showered on Madame Reisz. In her regression to her childhood governed by childish impulses, she pays attention only to fruits

and rewards of people and is unaware of the struggle and pains they undertook in their arduous journey to achieve their respective platforms in their lives. She emulates, she rebels but her in-experienced self tinged with romantic instinct of selfish care instead of self care leads her to indecision and the only choice Edna is left with is to make exit and she exercises this only choice left for her.

Madame Reisz, a disagreeable spinster, a solitary soul with worn-lace collar and damaged femininity, is alienated in her independence yet she follows the decorum of society in her seclusion and denouncement of luxury and embellishment. Edna invites upon her wrath of patriarchy as she enjoys all perks & privilege of matrimonial bliss with zero accountability.

Joseph Campbell observes how Edna "goes alone through the threshold into a zone of magnified power, a realm of darkness, the unknown and danger" (77).

Reisz has built a life for herself, full of growth and suffering. Edna never has a suffering, all her comforts are borrowed from her husband and this purposeless, motiveless life gives her hopeless ennui. She is not apprised of the fact that one of self is burnt to accord sheen to the other.

Edna makes a family and shunning away her duty she tells her paramour "we shall be everything to each other. Nothing else in the world is of any consequence" (Chopin 993).

This is the pure example of her narcissism even the admonition of her friend, Adele "think of children, Edna, think of them does not remind her of her duty; this horrid idea of unfulfilled duty for sexual awakening makes her desperate to leave, to go away from consequence.

Conclusion

Edna speaks "a language which nobody understood ... her desires involve an obsessional valorization of the masculine" (Yaeger 197-198).

Here it is very clear that Edna being a thinking woman reflects on her life, her achievement and accomplishment. Hollowness of her life, unfulfillment of her self whose worth and urgency she lately realizes, stimulates her further to evolve it through painting, personal income and achievement. Edna speaks to her family through her silence, her gesture and her rebellion but her language is either silence or shriek not understandable to her kinsmen or friends.

Edna's awakening is a complex convergence of inherent and environmental factors : an individual nature in lately imaginative, sensual and non conformist; an increasingly pathological narcissism that leads to her death (Glendening 42).

Edna's awakening is a magnanimous project with imperfect employment; she recognizes, receives, reviews, recovers, develops inherent possibilities but fails to recuperate from her

miasma of romantic utopia instead of realistic suffering and strength. Chopin registers her evolution as Edna "was becoming herself and daily casting aside that fictitious self which she assume like a garment with which to appear before the world" (Chopin 55).

Here, it is crystal clear that Edna's changing self becomes more and more narcissist as she denounces society that surrounds her. She surrenders to the sea to save her soul from constraints of life, adjustment and accountability towards her relations; she evolves a nascent self but its narcissism consumes her completely.

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Continuity and Changing Patterns of Economic Outline among the Tribes of Odisha: Some Conceptual and Analytical Issues

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Abstract

Primitive tribes survived for thousands of years in woods and hills, interacting only occasionally with people living on the broad plains and in the centres of civilization. Here is an attempt to review the tribal life of Mayurbhanj district in the context of economic improvement and social changes. Since the region is now known as Odisha, the process of change has directly or indirectly affected the tribal people, who have chosen to maintain their unique culture and way of life despite being segregated in Odisha's hilly regions. Especially, the Mayurbhanj district has a higher concentration of tribal people than any other district of the state. The present research paper also covers an analysis of economic status, employment profile, and the availability of agricultural infrastructure facilities in the tribal society of Mayurbhanj district.

Keywords: Economic and Agriculture, Land, Unemployment, and Irrigation

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Introduction

Tribal communities in general are referred to as Adivasi (Original Settlers or Autochthones), Adimjati (Primitive Castes), Girijan (Hill-Dwellers), Vanvajasi (Forest Castes), and Janjati (Folk Castes), and by the constitution of India as Anusuchit Janjati (Scheduled Tribe). In Sanskrit, the term Jana means 'to be born' or 'to give birth to'. From this, it may be concluded that tribes are among the older settlers of India. Due to geo-historical reasons, they have remained somewhat techno-economically backward. Members of each tribe have their own traditional ethno-cultural identity, and they are proud of it. As culture has a fundamental bearing on the physical environment, each tribe has its own distinctive culture, which is unique in some respects, yet it bears similarities with the culture of other ethnic communities. People cope with their physical, social, and ideological domains through their culture. Thus, culture has survival value. Therefore, any model of development must be perfectly in tune with the culture of the target population. Culture is always understood in a holistic frame. Hence, any attempt to truncate it and understand it piecemeal will provide fragmentary view (N. K. Behura, 2003:51). For millennia, people have lived a basic life centred on the natural environment, developing cultural patterns that are compatible with their physical and social environments. Even in ancient literature from the Ramayana and Mahabharata periods, references to such tribal groupings and populations may be discovered. Their social and economic systems were primordial, with rudimentary political institutions playing definite roles and functions. Their traditional socio-economic and political systems had an impact on later developments, and the so-called tribal culture engages in cross-cultural contacts with other cultures (S. G. Deogankar, 1994: 1-2).

The early history of the tribe reveals that they were subsisting on hunting wild animals and gathering roots, fruits, and tubers from the forest, while their abode was the dense jungles. Gradually, due to increasing contact with the Hindu caste communities, they started practicing incipient and finally plains-land wet agriculture. Even in Mayurbhanj, they confess that they were exclusively depending upon hunting and gathering, but due to close association with a caste community, they learned the techniques of agriculture. But the abundance of land around their place of habitation made them complacent to acquire, and later, the policy of forest reservation left them almost landless (K.K. Mishra, 1987: 30). In the advent of India's independence, the Indian leaders expressed their concern, which was manifested in the Indian constitution, which provides positive ameliorative safeguards. The constitution laid down broad objectives that might bring radical changes in the tribal communities of different parts of the country, and since then, the government has been leaning heavily on the formulation of family-oriented programmes to raise the productivity of the tribals, particularly in the fields of agriculture, soil conservation, and forestry. The most striking feature of planned changes as envisaged is to involve people in the form of

community development blocks, Gram panchayats, and families who are directly affected (B. C. Roy, 1989: 96). The present research paper consists of a social profile of the tribals of the Udala block of Mayurbhanj District. It covers an analysis of social profile and its transformation among the tribal communities in general and PVTGs in particular of Mayurbhanj District.

Problems of the study

Mayurbhanj's adivasis, despite lacking education and advancement, still maintain a rich culture that may be preserved and will be with them forever. Large number of tribals are illiterate, and a few are barely literate. They are simple, innocent, and trusting people who believe in magic, witchcraft, spirits, and ghosts, even though they live in the modern age. They have been exploited by more organised commercial interests for generations. The socio-economic conditions of tribals are not good. All of them depend on agricultural work. A few tribals have agricultural land, and others depend on agricultural labour and other work. Some of them are dependent on the forest itself to collect leaves and wood from the forest, but the government policy in the reserved forest area is preventing them from entering the forest to collect wood, leaves, etc. The forest rangers in that area treat them in many ways. They are not permitted to pasture their cows, pigs, buffalos, goats, etc. in the jungle (forest). Many tribals do not have household land; they occupy forest land illegally. Until now, the government has not given permanent appointments to those innocent people who have been living in that area for many years.

Objective of the Study

Objectives refer to the basic purpose for which the research work is conducted. It is the guiding light behind the conduct of any research activities. The basic purpose of the present work is to study "social profile and transformation" among the PVTGs of Mayurbhanj district. The objectives of the present study focus on the following points:

1. To explore the continuity and changing economic profile of the tribals.
2. To study the patterns of agricultural land, irrigation and agricultural method.

The following is the reasoning behind the district selection: 1) The tribals of Mayurbhanj district are generally found in steep areas, often close to forests. 2) The district in which practically all Primitive Vulnerable Tribal Groups (PVTGs) have lived for millennia has remote, less fertile, and agriculturally productive areas with mountains, hills, and forests. 3) Tribes living in such a remote place where job opportunities are scarce, relying on forest products and agriculture as sources of income. Many developmental programmes have been implemented by the government, and such programmes have been working here for the last ten years. The researcher wants to determine how successful the initiative

has been in such tribal regions by conducting the research work.

Research Methodology

The universe of the study is the tribal area of the Mayurbhanj district of Odisha. All the tribal areas of the Mayurbhanj district comprise the universe of the study. Mayurbhanj is unique in that it houses almost one-sixth of the state's total tribal population. Tribes only make up 58.56 percent of the district, placing it at the top among the thirty districts in the state with the largest percentage of tribals. A vast area of the district is barren, uncultivated, and hilly, and a considerable part is covered by forest, leaving small pockets only here and there for agriculture. In the district, the Khadia, Mankadia, and Lodha are primitive tribals worth noting. The nomadic Khadia and Mankadia inhabit the upper reaches of the Similan hill ranges in the Panchpir sub-division, particularly in the Jashipur block. On the other side, the Lodha are a criminal tribe that needs special assistance for socio-economic rehabilitation. They may be found in the Baripada sub-Suliapada divisions and Morada blocks. Another tribe, the Santal, is largely made up of small-scale farmers and agricultural labourers. The Santal, Kolha, Bhuyan, Bathudi Bhuyan, Gond, and other significant tribes can be found in Mayurbhanj. Their abilities, aptitudes, habits, culture, and customs are all different. As a result, the socio-economic landscape of the district's tribals is exceedingly complicated. Despite their social, educational, and economic disadvantages, they have their own distinct identity. They are virtually entirely reliant on established agriculture, with a small percentage of tribals subsisting on hunting and modest forest produce, while others who are landless work in mines and small industries.

Here, the researcher has used purposive- random sampling in his research work. Here, the researcher has taken 300 sample sizes and conducted his study among PVTG tribals (Lodha and Khadia) in Mayurbhanj district in Odisha. The following GPs were studied during the stated period, when the majority of the population was constituted by tribe. The investigation was carried out in the Udala block of the Mayurbhanj district by the researcher. Here, the researcher selected seven Grampanchayats (Podadiha, Soradiha, Sridam Ch. Pur, Kunda Bai, Radho, Bisol, and Athanagain), which have dense tribal populations. Primary data for the present study has been collected through interview schedules under certain headings like culture, festivals, marriage and dowry systems, customs, rituals, problems encountered, and solution measures. The interview method collects data through oral-verbal stimuli and responses in interviews. The interviewer met the respondents face-to-face at the site, using the personal interview method.

Economic profile

The economic profile of the tribals has been depicted in this research work. It covers shifting cultivation, occupational background, unemployment, traditional occupations, housing

type, land type, irrigation potential, etc. The tribal economy is based on subsistence. Birhor, Hill Kharia, and other subsistence economies rely on collecting, hunting, and fishing, or a combination of hunting and collecting forest products with shifting cultivation. Even conventional farming cultures supplement family needs by hunting and collecting forest produce. These economies have simple technology, labour division, cottage units, and no capital investment. Family and lineage are social units for production, distribution, and consumption. A subsistence economy is influenced by factors beyond human control, such as poverty, lack of knowledge, and capital for investment. It relies on a barter system and market-driven trade.

Kharia, Mankidi, Mankidia, and Birhor tribes in Mayurbhanj, Keonjhar, and Sundargarh districts rely on forest resources for survival and hunting. They live in makeshift houses made from natural materials and live in isolated bands due to economic constraints. Their way of life revolves around the forest, with poor technology, limited expertise, and traditional practices. Despite their modest population, their influence on Odisha's rapidly dwindling forest resources is substantial. However, their socio-political status remains inarticulate, leading to their disrepair and inarticulacy. The Koya, a pastoral cattle-breeder tribe, lives in Malkangiri District, which suffers from a lack of grazing.

Mahali and Kol-Lohara tribes in Odisha practice basketry and blacksmithing, supporting themselves through weaving baskets. The Loharas use ancient skills to make iron and wooden tools, while the Mahalis weave baskets. However, they face resource scarcity and poor technology, hindering their ability to compete in tribal markets, where other groups sell lower-priced commodities.

Shifting cultivation

There are several tribes that engage in hill and shifting farming. The Juang and Bhuyan people of northern Odisha and the Kandha, Saora, Koya, Parenga, Didayi, Dharua, and Bonda people of southern Odisha all engage in shifting agriculture. They complement their economy with food collection and hunting because shifting farming produces little. Shifting cultivation is a collection of procedures used to clear and cultivate areas of forest land, especially on sloping hillsides. Shifting cultivation practitioners conduct a cycle of activities that includes choosing a part of hillside or forest land and distributing or allocating the same to prospective practitioners. Worship to the relevant deities, as well as timely tree, shrub, and fern cutting before the summer months. Build up ferns, plants, and logs on the land. Burn ferns, plants, and wilted wood to ashes during the hot days before the monsoon. Before the monsoon arrives, clean the area, and then distribute the ashes evenly on the earth after a few raindrops. Early monsoon showers signal the start of sowing and harrowing. Crude bundling and weeding techniques are used once the seeds have

germinated. Monitoring and safeguarding the crops, gathering and harvesting them, threshing and storing the maize and grains, and finally having a good time.

Every member of the family is active in these enterprises in some way or another. Work is distributed among family members based on individual capacities. The family's head, on the other hand, takes on all of the difficult obligations associated with altering agricultural practice and operation. Adult males between the ages of 18 and 60 do the arduous task of cutting trees, ploughing and hoeing, and protecting the crops at night, whereas women do the cutting of bushes and shrubs, seed cleaning, and weeding. Shifting agriculture is not simply an economic endeavour for some tribal communities, but a way of life for them. The practice of shifting cultivation is responsible for their social structure, economy, political organisation, and religion.

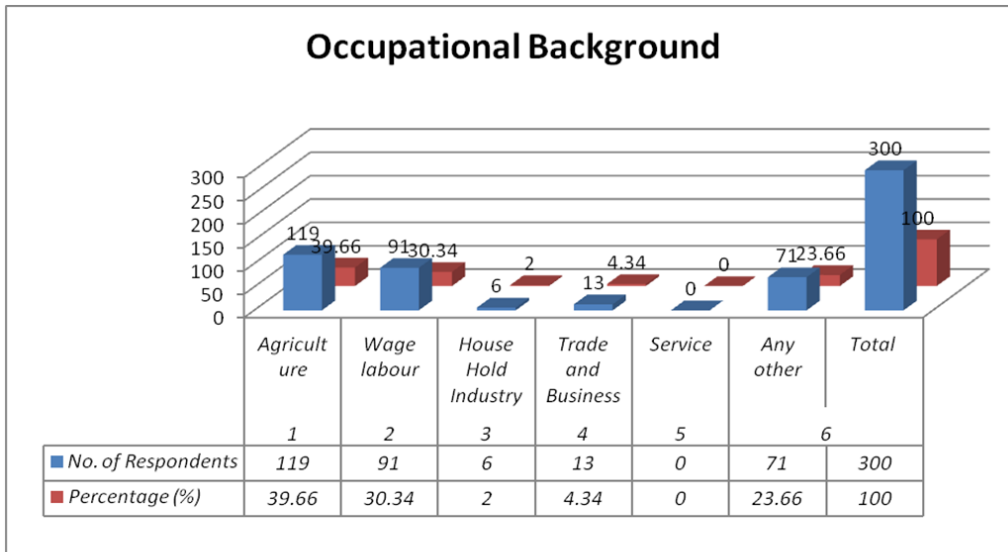
The tribal territories' land had never been mapped or inhabited before. As a result, the tribal people were free to spread farming throughout their distinct ecosystems, supposing that everyone had equal access to the land, the forest, the water, and other natural resources. The damaging yet unavoidable practice of shifting agriculture persists unabated, and all attempts to wean tribal people away from it have so far been ineffective. The colonising initiative of the state government has been a complete failure. In certain steep areas, terraces are constructed or carved out along the hillsides. It is considered to be the initial phase of established agriculture. The terrace farmers known as the Saora, Kandha, and Gadaba are all. The terraces are constructed on the slopes of hills that have water streams running through them.

The Santal, Munda, Ho, Bhumij, Oraon, Gond, Mirdha, and Savara tribes are established farmers who supplement their income by hunting, gathering, and collecting. Tribal agriculture in Odisha is characterised by unproductive and uneconomic holdings, land alienation, debt, a lack of irrigation facilities in undulating terrains, a lack of easy or soft credit facilities, and the use of traditional skills and rudimentary instruments. During the monsoon, people often raise only one crop and must consequently supplement their income with different forms of secondary economic activities. Tribal communities involved in settled agriculture face additional challenges such as lack of documentation of land rights under occupation, land alienation, debt, inadequate irrigation power, bad roads and transportation, seasonal migration to other areas for wage-earning, lack of educational opportunities, and lack of modernization opportunities.

A large number of tribal people have relocated to mining, industrial, and metropolitan areas in order to secure a living through wage labour. The operation of mines and the creation of factories have hastened the pace of industrial urbanisation in Odisha's tribal region over the last three decades. People from sophisticated tribal societies such as the Santal, Munda,

Ho, Oraon, Kisan, and Gonda have mostly turned to this economic endeavour to ease pressure on their limited land and other resources. Due to industrialisation and mining activities, tribal communities have been uprooted, and the displaced have become industrial nomads. Their customary occupation, agricultural land, habitat, and other immovable assets were completely destroyed. They became unemployed and faced unfair competition in the work market, and their desires steadily expanded, despite the fact that they constantly fell short of their objectives. As a result, frustration was the end result. The economic dynamics among the tribes in earlier days remained restricted to forest and agriculture. In post-independent India, the safeties and securities given by the constitution gave new direction to the tribal economy (S. L. Doshi, 1990: 145). The reservation facility provided a good opportunity for those who are well educated; they can get a job easily in any sector. Various developmental programmes of the government provided opportunities for entrepreneurial adventures. The development of industries in the town also attracts tribal wage workers who are looking for work.

Graph- 1: Occupational Background



Sources: Survey data

The above Graph-1 clearly indicates that 39.66% of respondents' occupations are agriculture. 30.34 percent of respondents work as wage labour because they have no agricultural land. Even during harvest time, they go to outside villages to harvest paddy. They also stayed there for a few days or a few months. They came back to their own village after finishing the work of the land lord. In many cases, they were exploited by them. 2% of respondents have their own cottage-based industry, e.g., they have the machine for preparing sal leaf plates. They collect the leaves from the forest, dry them in the

sunlight, and then sell them in the market. 4.34% of respondents have their own small trade or business of small shops. Rests 23.66% of respondents have other means, i.e., a small poultry farm, domesticated cows, goats, pigs, etc. Thus, it is clear that the tribal occupational pattern is based on agriculture and labour. Agriculture is the principal source of income for about half of the inhabitants of tribal communities. When compared to five years ago, this is an increase of one percent of households claiming agriculture as their principal source of income. Another one-fourth of households rely on agriculture as a supplement to their main source of income.

Unemployment

The true extent of unemployment in the Mayurbhanj district has yet to be determined. However, it is a well-known fact that underemployment is pervasive in rural regions due to the fact that the majority of residents depend on agriculture, which is more or less seasonal. Due to a lack of employment opportunities, these workers migrate annually during the paddy planting in the rainy season and harvesting in the winter from this district to other districts of Odisha as well as to the bordering districts of Jharkhand and West Bengal. Unemployment is a problem that affects educated people in general. Unemployed educated people from rural places are unable to compete for jobs in the mainstream.

The Governor of State has exceptional authority to alter state or federal law for the upkeep and good governance of Scheduled Areas in order to address the severe unemployment problem among tribal people in Scheduled Areas, with the approval of the President of India. At I.T.D.A. headquarters, a sub-employment exchange should be established, and district welfare officials should be designated as employment officers. Tribals should be given preference for certain types of jobs that are covered by the 'qualification relaxation' provision. Police constables, home guards, excise constables, hospital and dispensary attendants, watchmen, nurses, ayas, midwives, forest guards, deputy, surveyors, chairmen, cooks, record assistants, balwadi teachers, anganwadi workers, and others are examples of such positions. Appropriate training programmes for indigenous kids can be created under Human Resources Development programmes so that they can enter into self-employment schemes. In TSP (Tribal Sub Plan) areas, skill development is critical. To cut operational costs, a mobile short-term vocational training centre programme will be established. It is critical to find gainful jobs for ST school dropouts. These dropouts remain unemployed, posing a financial burden on their birth families (N. K. Behura, 2003: 55-56).

The district's poverty rate is as high as 78% in rural regions, despite the fact that various employment-generating and poverty-eradication initiatives are being conducted by the government. In addition to poverty, individuals are more vulnerable because of crimes, natural disasters, including floods, droughts, and cyclones, and climate change. The

government has to make concerted efforts in a number of key areas of concern, including gender inequality, poor basic healthcare, poverty, food security, inadequate irrigation infrastructure, and illiteracy. On top of that, acute unemployment and rising extremism are concerns to be addressed with priority.

Housing Type

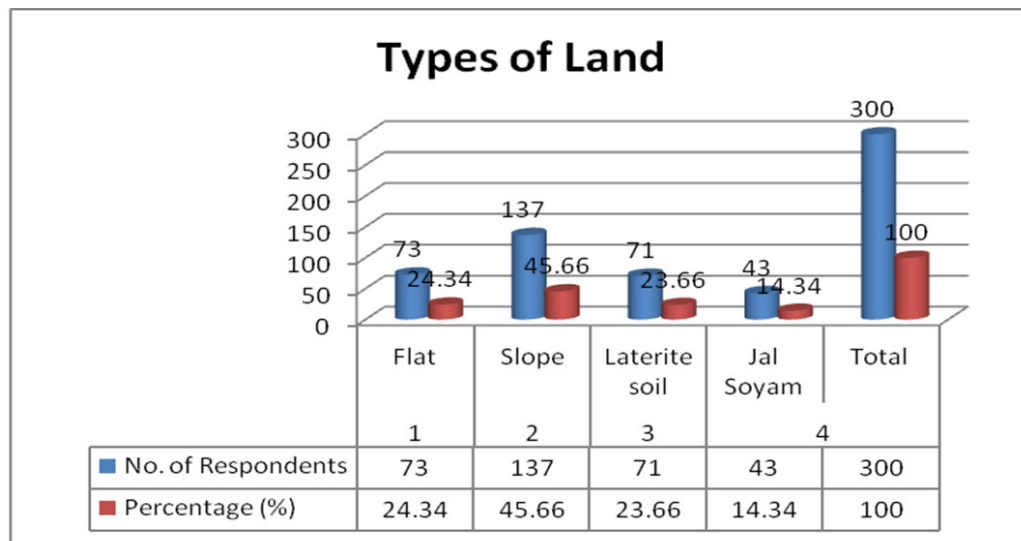
The homesteads and huts are located in a small, tightly linked community. These are generally not dispersed across a vast region but rather concentrated in a single location. It is a basic requirement for the tribe. There are basically two types of homesteads found among the tribal: Kaccha House and Pucca House. The first type of roof has a thatched roof, and mud floors are common. The walls are either bamboo-made or dry shrubs of a local variety, plastered with mud, and there are a number of wooden pillars supporting the thatched roof. The walls are painted with locally available yellow or red mud. These types of homes have one or two rooms, and the outer extension attached to them serves as a kitchen room. A tribal residential unit frequently consists of two or more huts, one for the parents and the other for the married son. Outside their residential units, they additionally construct a shed for domestic animals. Each unit has a consistent pattern. They've recently begun to tile their roofs. The majority of the apartments do not have windows. For boundary purposes, certain hamlets stack loosely built stone walls. When a young man marries, he moves into a new home. The newlywed pair lives in a newly constructed apartment near the units of other family members. The second type of pucca house is rarely found because they are not able to construct it due to poor economic conditions. Tribals can get it with the help of a government scheme known as the "Indira Awas Yojana." Besides, some tribals of the district stay in unauthorised dwelling units built on unauthorised or encroached forest land. 47. 66% of respondents in the surveyed village have thatched roofs with mud wall dwelling units. 41% of respondents have concrete houses. The residual 11.34% of respondents declared that they have no dwelling unit or have stayed on unauthorised premises. Those respondents who have pucca houses are not built by them but get them through the effort of the government. It means the government provides it through Indira Awas Yojna, the scheme that played a vital role in this area for providing housing facilities to the tribals. Despite their strong efforts, large numbers of tribes still suffer from a lot of problems due to their dilapidated dwelling conditions.

Land Type

Agriculture and related activities account for 80% of the district's employment. Mayurbhanj has a total cultivated area of 4,37,000 hectares. The district's total agricultural farm family number is 3,41,000, with marginal farmers accounting for 1,63,122 (48%), small farmers accounting for 1,34,402 (39%), and large farmers accounting for 43,476. (13%) (Plan

Proposal for Rashtriya Sam Vikas Yojana, 2004-2009: 34). The agricultural land where the tribals cultivated is of very poor fertility. The government must make efforts to uplift the standard of agrarian tribals. It would have to promote the use of fertilisers by tribals to increase the yields of different crops. The government should persuade the tribals to use these varieties to get a better harvest from the fields. The top soil that makes up the majority of the district appears to have come from the underlying igneous metamorphic rocks, and the variation is mostly attributable to classification and transformation influenced by surface drainage. The smaller particles have been transported into low-lying valley regions along drainage lines, causing the soil to have a clay-based, silty texture and leaving the uplands barren and sandy. The most common categorization of the soil in this area is based on its location or level. Except for a few rivers, the terrain is mostly undulating, with peaks, slopes, and depressions. Besides, there are two other types of land: laterite soil and Jal soyam. These two types are third-class wet land with no fertility value whatsoever (Odisha district gazetteers).

Graph- 2: Types of Land



Source: Survey data

The graph-2 highlights that 24.34% of respondents have flat-type land, 45.66% of tribals have sloping-type land, 23.66% of tribals have laterite soil, and a residual 14.34% of tribals in the surveyed villages have jal soyam land. From the above statement, it is clear that, besides flat and sloping land, the other two types of land are not favourable for cultivation. So these lands are known as unproductive land. Therefore, the tribals are not in a position to improve their standard with the help of cultivation. The tribals' most primitive vocation is agriculture. Despite the fact that they switched from shifting to settled farming, many

farmers' habits have remained the same. It's possible that the techniques haven't changed because they find them to be more sustainable. Hearing that the tribals are backward or primitive is unpleasant. It has an impact not just on tribal attitudes but also on the mental assessments of organisations operating in those communities to help them improve. As a result, technology should be provided to them without creating any trouble. They have developed a variety of relevant technologies that have proven to be sustainable in their traditional farming practices.

Traditional agricultural practices such as lack of public awareness, non-application of improved agricultural tools, manure, pesticides, and gradual soil erosion, infertile land, non-application of High Yielding Variety (HYV) seeds, lack of irrigation facilities, and small agriculture holdings all contribute to agriculture lands' overall low productivity. The people's hardships are exacerbated by the limited opportunity for diversification.

Irrigation Potential

In agricultural terms, irrigation refers to the process of watering a crop. Irrigation is a method of watering plants and crops. No water is wasted due to runoff, deep percolation, or evaporation with a drip irrigation system. In a nutshell, water is used most efficiently in drip irrigation, which also saves process water when farmers face a dry season with low rainfall. We can also define it in another way. Irrigation is the process of applying water to land or soil artificially. It is used to re-vegetate damaged soils in arid places and during dry spells, to conserve landscapes, and to cultivate agricultural crops. Other uses for irrigation in agricultural production include shielding plants from the cold, reducing weed development in grain fields, and preventing soil compaction. On the other side, agriculture that depends only on direct rainfall is known as "rain-fed" or "dry land" farming. In addition to mining, dust control, and sewage disposal, irrigation systems are used. It is common practice to conduct investigations on irrigation and drainage, which involve the removal of surface and subsurface water from a specified area either naturally or artificially.

Irrigation is one of the most crucial aspects of agricultural cultivation. It allows for more efficient use of all production elements, resulting in a higher yield per unit of land. Irrigation in agriculture ensures that crops retain moisture for a long time, resulting in maximum agricultural output with the least amount of water input. The monsoon's irrigation technique begins with the arrival of the rainy season and continues until the water is efficiently used by the developing agricultural crops. As a result, it includes soil management and cropping patterns that follow the rhythm of the plant's needs. Because the state receives rain throughout the year, irrigation is only necessary in locations where the soil has a low water retention capacity or in undulating valleys. They level the soil properly, so that water can flow freely from one plot to another. It is not permissible for water to flow over the plots.

The main water channel is periodically checked at different levels. In order to direct water flow towards the field and from one field to the next without breaching the ridges, they employ bamboo or clay pipes. They occasionally lay a flat wooden board or a flat stone slab on the ground to resemble a waterfall. Water only flows after cushioning the direct contact on the stone slab or wooden plank, which helps to conserve top soil. This method is employed in locations, where there is a perennial stream in a gradient area and farmers use bamboo drip irrigation and continuous irrigation.

The most important component in increasing agriculture production is timely and reliable water supply to crops. In this district, irrigation is only available in roughly 15.2 percent of the cultivable area during the Khariff season and about 5.31 percent during the Rabi season. In the district, there are six finished medium irrigation projects and one ongoing project. These irrigation projects provided the following irrigation potential is as follows (Official Data Mayurbhanj District).

Table - 1: Name of the completed irrigation projects

Sl. No	Irrigation potential in Hectare	Kharif	Rabi
1	Balidiha (Shamakhunta Block)	3830	-
2	Haldia (Kuliana Block)	2030	200
3	Kola (Kaptipada and Udala Block)	4800	1920
4	Nesa (Bahalda Block)	1203	250
5	Kharkhel (Kusumi Block)	7990	4040
6	Sunei	7900	4200
	Total	27755	10710

Sources of Major irrigation:

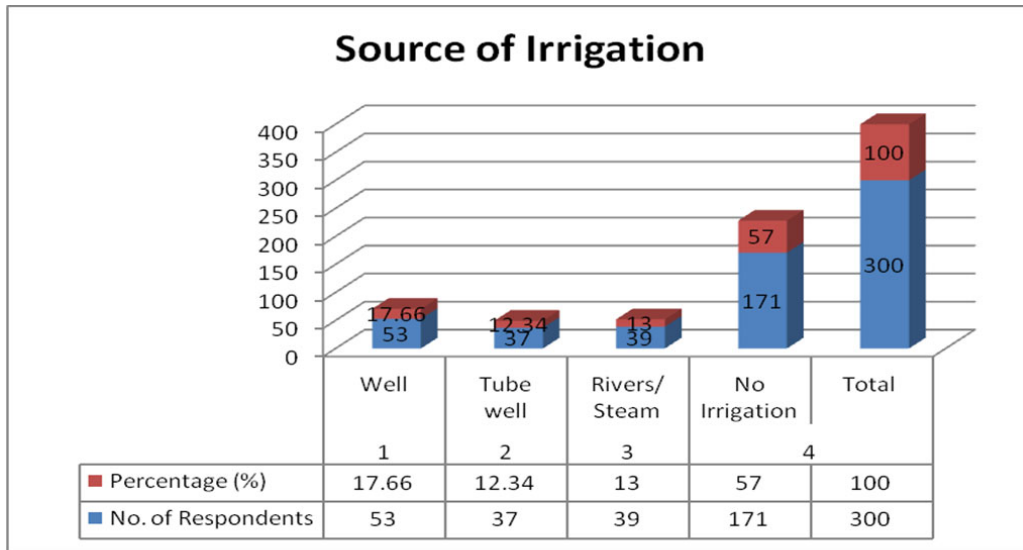
Under major irrigation projects like the construction of dams, inter-state agreements, etc., major policy includes the funds provided by both the state and central governments. The state is currently under pressure to locate extra water resources through 'trans basin' water diversion from neighbouring states with abundant surplus water resources. This entails 'inter-state' agreements as well as large national policy measures. During the Tenth Plan period, the World Bank-funded Water Resource Consolidation Project (WRCP) was implemented to rehabilitate and modernise storage and conveyance systems, as well as to facilitate farmers taking over operation and maintenance of the tank irrigation system, thereby improving the farming community's economic status. Apart from the completion of the existing medium and minor irrigation projects, the project's primary components include system improvement and farmer turnover (SIFT). Anti-sea erosion and flood control activities have been undertaken to address the problem of coastal erosion at a number of

sites, which is causing not only the loss of valuable land but also the risk of human life. In this district, no large irrigation projects have been completed. The Subarnarekha irrigation project, on the other hand, is also going on.

Sources of Minor Irrigation

Tanks, wells, and tube wells, which are prominent sources of minor irrigation in Mayurbhanj district, contribute significantly to irrigated agricultural regions. Irrigation is supported to a large extent by tanks and wells, which cover a large portion of the overall irrigated area. Minor irrigation works and canal rehabilitation works have been taken up in the tribal areas of the district. There are currently 249 minor irrigation projects in this district. Category-wise details are as follows: The formation of new tanks, construction of anicuts, excavation of link canals, restoration of abandoned tanks, formation of ponds, and standardisation of tanks are all part of the Special Minor Irrigation Project, which is funded by the National Bank for Agriculture and Rural Development (NABARD) under the Rural Infrastructure Development Fund (RIDF). Desalting-cum-reclamation programmes combine desalting of tanks to replace capacity lost due to siltation with foreshore land reclamation.

Graph - 3: Source of Irrigation



Source: Survey data

It is clear from the above graph-3 that 17.66% of the total respondents depend on well irrigation, 12.34% respondents irrigate with tube well, 13% tribals irrigated their land through help of river/stream, and balance 57% tribals have no irrigation facility for their land. Thus, it is clear from the above data that the major availability of irrigation facilities is based on

government efforts. The government must initiate adequate efforts to uplift the standards of farmers. To do this, it needs to encourage farmers to use fertilisers, which will raise agricultural yields of all kinds. The government should also persuade the tribals to cultivate their land using advanced techniques and use improved varieties of seeds to get a better harvest from the fields. For irrigation, the government should also make an additional effort as the target is very high and yet to be achieved.

Table - 2: M.I.P.S Certified (hectare) ayacut

Sl. No	Category of M.I.P.S Certified (hectare) Ayacut	Total No. of projects in hectare.	Design Ayacut Khariff in hectare.	Design Ayacut Rabi in hectare.	Certify in hectare.
1	Completed projects	12	22504	4610	22273
2	Partly derelict project	30	2884	200	1878
3	Ongoing projects	8	3680	1172	122
4	Completely derelict Project	26	1980	276	-
5	Block transferred project	50	3007	48	-
	Total	249	34055	6386	24273

(Source: - Official Data of Mayurbhanj District)

Major perennial rivers

The perennial rivers Budhabalanga, Deo, Sunei, Gangahaar, Jambhira, Khadkhai, Khairibhandan, Bankabal, and Katra, as well as their tributaries that originate mostly in the Similipal Hills, have significant potential for water resources to be used for a number of purposes. These rivers provide several opportunities for irrigation extension, which was previously only a pipe dream due to a lack of funding. The district's six medium irrigation projects, 202 small irrigation projects, and hundreds of ponds and tanks offer numerous potentials for reservoir, fishery, and pisciculture development. In order to further agricultural growth, irrigation is essential. Its sensible use aids in raising productivity by allowing cultivators to use more fertiliser and double crops in tribals' largely agricultural economy based on tiny holdings. The topography of the region, where tribals reside, raises special problems such as rocky substratum, inadequate subsoil water supply, and the drying up of water in streams during the summer.

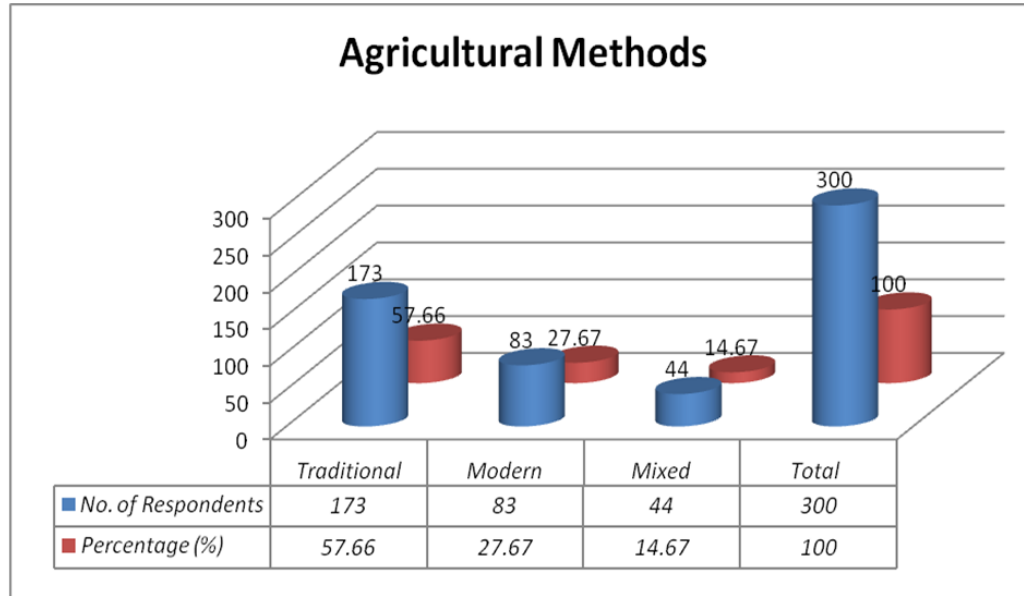
These factors add to the cost of the construction of wells. The other forms of irrigation are harnessing streams' rivulets. It is therefore necessary to carry out hydrological surveys to locate where perennial sources of underground water are available. The survey reveals that the irrigation status of the areas is not adequate for such purposes; the government's efforts are made but are not successful in the district. 17.66% of the total surveyed households have irrigated land, and 57% of households have unirrigated land, while a

balance of 25.34% of households have both irrigated and unirrigated land, meaning partially irrigated and partially unirrigated land. From the above statement, it is clear that the irrigation status of the area is not adequate. That's why the government has tried to improve the irrigation sector. But the required target has yet to be achieved. The irrigation sector's main goal is to enhance production per unit of water in order to increase farmers' income and promote fairness and social justice among water users. This will be accomplished through preserving and stabilising current water resources, with a focus on improving the performance of users. It also aims to enhance agricultural productivity by expanding the irrigated area and improving water use efficiency through microirrigation and other water-saving techniques. Participatory irrigation management will be promoted in order to ensure fair water use as well as flood protection and drainage.

The installation of private bore wells has been made in order to increase irrigation capacity. In the Kharif and Rabi seasons, the percentage of irrigated land in the district is just 21% and 9%, respectively. More land will be irrigated in order to increase cropping intensity and productivity. It is intended that 100 bore wells be installed for this purpose throughout a three-year plan period. It is intended to provide a 50% subsidy of Rs 50000 each to individual or group recipients. A total of 400 hectares will be irrigated after the projected number of bore wells is installed.

Agricultural method

Agriculture being the backbone of tribal economy, the programmes of tribal development centre round agriculture and allied sectors. Problems under each sector have to be identified and suitable programmes evolved for the overall development of tribal economy. Training tribal people in improved farming techniques is a crucial component of this project, made more relevant and significant by the fact that a sizable portion of the farmed land was placed under irrigation during the fifth plan period. Water management techniques, growing of high yielding varieties of food and cash crops, application of fertilizers, etc., should be taught in the demonstration-cum-training plots laid for the purpose.

Graph -4: Agricultural Methods

Source: Survey data

The above graph 4 indicates that 57.66 percent of respondents in the surveyed village followed the traditional agricultural method. 27.67 percent of the tribals followed modern techniques for their agricultural production. And the rest, 14.67 percent, of tribals partially followed traditional methods and modern technical methods for agricultural production; thus, it is clear from the above table that today's modern technology also impacts tribal agriculture. The government effort plays a vital role in that area by encouraging them to follow modern techniques in their agriculture. In spite of all these efforts, there are also large numbers of tribals who follow the traditional methods and techniques in their farming for various reasons. The main reason behind this is poverty. Due to a lack of money and poor standards, they are unable to apply modern techniques to their agriculture. It is evident from this that the tribal territory does not have advanced agricultural practices.

Conclusion

The above discussion highlights the backward situation of tribals in study areas when compared with other parts of the state. The study clearly reflects that tribals are still suffering from many problems, like socio-economic, cultural, and many other problems that have been discussed. There are still some groups that rely on hunting and food collection as their primary source of income. Tribals' primary occupations are food collection and farming. Even for six months of the year, sustenance is difficult due to the poor soil, lack of irrigation, and archaic manner of cultivation. The tribals rely only on forest produce or paid

labour for the remaining six months. Poverty, illiteracy, malnutrition, a lack of safe drinking water and sanitary conditions, inadequate maternal and child health care services, and ineffective coverage of national health and nutritional services have all been identified as factors contributing to the country's poor health situation among primitive tribal communities. Infectious and parasitic disorders can be avoided in many cases. To sum up, we may say that the entire tribal civilization is currently undergoing a key stage of transformation. Various modernising forces have ushered in fast changes in their entire socio-cultural environment. Changes brought about by contemporary and scientific attitudes are positive signals for progress, but they must also be mindful of the importance of preserving their old institutions. The socio-economic backwardness forced them to depend on available resources around their settlements. The situation clearly indicates the underdevelopment of the tribes in society. The state has given due importance to the tribal region for its socio-economic and cultural development. The quantity of resources supplied to the tribal regions was inadequate, and the bulk of the earmarked resources meant for the development of the tribals in the region have been diverted and misappropriated by the nexus, consisting of bureaucrats, contractors, and politicians more often than not.

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India's Blitzkrieg: Lightning War to Free a Nation

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Abstract

India has always wanted cordial relations with its neighboring countries. While maintaining its integrity and sovereignty, India has never been ambitious to suppress any neighboring country or expand its territory. Whenever the neighboring countries needed us, we have always come forward to help them by showing generosity. But if a neighbor has crossed his limits or tested our patience, we have given a befitting reply at the right time. The victory saga of the 1971 war is such a story of indomitable courage and valor of Indian soldiers that will always inspire generations to come. The victory of the Indian Army in the 1971 war is accepted as a classic military operation in military history. The Bangladesh campaign of the Indian Army is compared to the Blitzkrieg campaign of Germany in World War II.

My research paper gives India's Blitzkrieg of this war. The "superb" and "impeccable" activities of three wings of our forces have been highlighted in the daily of the 13 days war.

Keywords: Blitzkrieg, Bowl, Lightning, Mukti Bahini, Manek Shaw.

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Introduction

In the year 1971, 51 years have passed since India's war with Pakistan. But, even today when that time of war is remembered, the blood boils in the veins of every Indian. The Indian Army had brought Pakistan to its knees. A new country was born from this war in the year 1971 and that was Bangladesh. On 16 December 1971, 93,000 Pakistani soldiers surrendered to the Indian Army raising the white flag. India celebrates '*Victory Day*' every year on 16 December and Bangladesh celebrates it as '*Bijoy Dibos*' with a slight difference in pronunciation. It is celebrated in the memory of the most gruesome battle. The 1971 India-Pakistan War is a significant confrontational event between India and Pakistan. It created a new country by splitting Pakistan. It was the first war in the post independence era in which India, proactively, displayed political resolve and military capability to achieve a decisive victory. It is considered one of the shortest wars in military history, which had a profound global impact.

Till 1947, India, Pakistan and Bangladesh were one nation geographically, politically and culturally. In 1947, the British decided to leave India. Before leaving, the British left after dividing India into two parts. India and Pakistan became two countries after partition. Pakistan was born on the basis of religion. But religion could not bind Pakistan for long. Then the present Pakistan was West Pakistan and today's Bangladesh is East Pakistan. Within a few years after independence, discontent began to grow in the eastern part against the Punjabi dominance and the dominance of West Pakistan. Initially, Pakistan had two wings; East and West Pakistan which were geographically separated by 1600 kms of Indian Territory. The politics of West Pakistan never gave importance to the aspirations of the Bengali people. Due to continuous neglect of Bengalis, the structural problems of Pakistan became more complicated. (Ayoob & Subramanyam, 1972, p. 2)

In 1905, Bengal was partitioned in the name of religion. Pakistan was formed on this religious thinking, but it was a struggle for cultural identity above religion. In fact, the seeds of the struggle for the independence of Bangladesh were sown in 1952 itself, when Pakistan declaring Urdu as the official language of the entire country, their differences with Bengalis started.

Pakistan was born on the basis of religion. But religion could not bind Pakistan for long. Then the present Pakistan was West Pakistan and today's Bangladesh is East Pakistan. Within a few years after independence, discontent began to grow in the eastern part against the Punjabi dominance and the dominance of West Pakistan. Cultural and linguistic differences between Muslims living in West and East Pakistan created all the necessary conditions for the partition of Pakistan in 1971, leading to the birth of a new country, Bangladesh. (Spear, 1990, p. 5-7) The federal system of Pakistan had completely failed.

Despite Bengalis being the majority, the politics and power of Pakistan was concentrated in the hands of Punjabi Muslims living in West Pakistan. (Jackson, 1975, p. 9)

For East Pakistan, which has a separate identity of Bangla culture and language, then that decision of the government became a question of identity, the result of which came out as a separate and independent country. Sheikh Mujibur Rahman was fighting for the autonomy of Bangladesh from the beginning. For East Pakistan, which has a separate identity of Bangla culture and language, then that decision of the government became a question of identity, the result of which came out as a separate and independent country. Sheikh Mujibur Rahman was fighting for the autonomy of East Pakistan from the beginning. He had announced a six-point program for this. With all these things, he had become an eyesore of the Pakistani government. Along with this, some other Bengali leaders were also on the target of Pakistan. Mujibur and other Bengali politician were prosecuted for separatist agitation for their suppression and with the aim of suppressing the voice of rebellion forever. But this move of Pakistan overshadowed itself. This made Mujibur Rahman a hero in the eyes of the Bangladeshi. This put Yahya Khan on the back foot and the conspiracy case against Mujibur Rahman was withdrawn.

Mujibur Rahman's party Awami League had won a landslide victory in the elections in United Pakistan and became the rightful owner of power. Mujib's party got 169 to 167 seats in East Pakistan. In this way, in the 313-seat Pak National Assembly, Mujib had an overwhelming majority to form the government. But the leaders and military leaders of West Pakistan, who were controlling Pakistan, did not accept the rule of a Bengali leader. Due to this betrayal with Mujib, the fire of rebellion in Bangladesh was natural. Bengalis started agitating on the streets. After being cheated in the elections of Pakistan, the freedom movement in East Pakistan got intensified day by day. Pakistan's army resorted to torture to suppress the movement. In March 1971, the Pakistani army launched a brutal campaign. Atrocities were committed on a large scale in East Bengal. Murder and rape became culmination.

The elitist-feudal mentality of Pakistan still lives in the delusion that it is the successor of the Muslim rule in India. His attitude towards his Bengali Muslim brothers and sisters and his fellow-citizens was that of haughty, scornful and arrogant supremacists. When Pakistani soldiers and their comrades used to rob Bengali women of their dignity, they used to call their heinous deed to improve the DNA of Bengalis. The elitist-feudal mentality of Pakistan still lives in the delusion that it is the successor of the Muslim rule in India.

On 14 December 1971, when the independence of Bangladesh was almost certain, the Pakistani army rounded up prominent intellectuals in Dhaka and subjected them to severe inhuman torture, two days before the surrender. Then their dead bodies were thrown in

Rairabazar and Mirpur near Dhaka. A memorial has been built in Rairabazar where a large number of bodies were dumped, and Bangladeshis celebrate Martyrdom Day every year on that date in the memory of their intellectual martyrs. Such was the wicked and despicable behavior of Pakistan towards the Bengali Muslim brothers of their country.

The Pakistan Army and its local allies, ranging from Bihari Muslim refugees to hard-line Bengali Islamic members of *Jamiat-e-Islami*, formed a local militia known as '*Razakar*'. This name was adopted by its Nizam for the independence of Hyderabad from India with its Muslim residents. The armed force created was named after '*Razakar*'. These *Razakars* were notorious for brutally trampling on the aspirations of strong-minded people to live together with India. To suppress the local people, especially the Hindus, these *Razakars* subjected them to severe torture, robbed them, killed them and raped their women. In such a situation, there is no doubt that the Pakistani army got inspiration from the same example. On the lines of *Razakar*, he used local residents like '*Al-Badr*' and '*As-Shams*' to physically and mentally torture the Bengali population, who wanted liberation, rob them, kill them and misbehave even with their women. Armed forces were formed. The names of these marauding groups were taken from Islamic history so that they could be easily used to instill *jihadi* sentiments among Muslims.

Due to the brutality of the Pakistani army, a large number of Bangladeshis took refuge in India; this caused a demographic and economic burden on India. A political problem had also arisen in India due to the arrival of a large number of Bengali refugees. Mostly Bengalis who took refuge in India were Muslims which may have affected the demographic profile of the Border States; it may also have led to communal conflict with the Hindu community. (Ganguly, 2001, p. 61) The refugees included many para-military personnel of East Bengal Rifles and East Pakistan Rifles. Once on the Indian soil they organized themselves as fighting units of the *Mukti Bahini*. Many Bengalis serving with the Pakistani Armed Forces deserted and joined the *Mukti Bahini*.

Due to the clashes between *Mukti Bahini* and Pakistani Army the atrocities increased drastically and the Indian borders were often transgressed by the Pakistani troops. Hard-pressed by the burden of refugees, India stresses on safe return of Bengali refugees. At the same time the US in an act of moral blindness supported Pakistan as both President Nixon and the NSA Henry Kissinger were keen on using the offices of General Yahya Khan to reach out to Chairman Mao of China for rapprochement after decades of hostility. Infact, while on a visit to Islamabad, in July 1971, Kissinger was flown secretly to Beijing to meet with the Chinese Premier Chou-en-Lai. This increased the pressure on India to act against Pakistan and the then Government of India had to teach Pakistan a lesson.

The Indo-Pak War of 1971 was the first war when the Indian Government engaged all

three Services on a large scale. This war was fought on both the eastern and western fronts. On the Eastern side, Pakistan adopted the defensive strategy to delay the ingress of Indian troops, while on the Western side, it adopted the aggressive policy to occupy some Indian territory so as to force the Indians to give up gains in East Pakistan and divert troops to the Western front. In contrast, India adopted a defensive strategy on the Western front and an offensive strategy on the Eastern front. (Chakravorty, 1995, p. 16)

India's Blitzkrieg (Lightning War)

The 1971 war for the independence of Bangladesh holds a historic place in military history, in which the Indian Army, Air Force and Navy combined to force the Pakistani army to surrender in just 13 days. Foreign military strategists have compared this achievement of the Indian Army to the German Blitzkrieg of Second World War. The Bangladesh liberation campaign launched by the Indian Army was a great strategic achievement.

Blitzkrieg (lightning war) is an anglicized term meaning a combined attack by all-mechanized military forces of tanks, infantry, artillery and air power, combined with overwhelming force and rapid firepower to break through enemy lines. The attack is carried out with speed, and once the enemy line is broken, it moves forward quickly without regard for its flank. Blitzkrieg, at a constant pace, tries to keep its enemy off balance; this makes it difficult for him to respond effectively at any time unless the next line has already moved. The idealization of Blitzkrieg is a part of the German strategic and operational process in the first half of World War II, often understood as a new method of warfare. Strategically, the term has come to mean "lightning war", referring to a series of short, quick and decisive battles fought against an enemy state to gain a winning edge before it is ready to go to war. Blitzkrieg refers to the strategic use of tanks, combat-ready infantry, artillery and aircraft to destroy an enemy, so that strategic superiority can be achieved by destroying the enemy's defensive system. (Keegan, 2005, p.109) General Heinz Guderian of Germany was the first to fully develop and advocate the principles associated with blitzkrieg. He summarized combined-arms tactics as a way for the mobile and motorized armored branches to work together and help each other to achieve decisive success. (Guderian, 2001, p. 20)

India enjoyed a superior military capability over Pakistan. The Indian Army, comprising 833,800 men, had fourteen infantry divisions, ten mountain divisions, an armoured division, four independent armoured brigades, and two parachute brigades having more than 1,450 tanks and 3,000 artillery pieces. Ten infantry/mountain divisions were deployed in the Eastern Theatre along the Chinese border and to contain insurgency in the North-East. India enjoyed numerical superiority over Pakistan in the East while it was near parity in the West. The Indian Armed Forces had a favourable force-ratio of 1.4:1 over Pakistan-adequate not to get deterred by Pakistan's strategy in the West, and simultaneously execute

offensive operations in Bangladesh. The Indian Air Force enjoyed a qualitative and quantitative advantage over the PAF, while the Indian Navy was considerably more robust, having an aircraft carrier. Its indigenous military-industrial complex was adequate to support operations, while Pakistan depended on foreign support. With both the compellence and deterrence strategies failing to achieve the desired political aims, India's propensity towards a military option strengthened. Pakistan underestimated India's intention and capability in the East and overestimated itself in the West. (Cheema, 2020, p. 19-20)

Indian Army planned a strategy of "Swift Offensive in the East, Offensive-Defensive in the West and Defensive along the Northern borders". (Prasad & Thapliyal, 2014, p.105-106) A quick offensive in Bangladesh was essential to win a decisive victory before the international community could intervene. Pakistan's strategy, on the other hand, was almost the exact opposite of India-it planned to defend East Pakistan by threatening vital Indian areas in Kashmir and Punjab to draw the Indian forces away from the East, thereby gaining enough time for the international community to restrain New Delhi.

The Indian Army's strategy envisioned capturing the maximum area bordering the Brahmaputra and Meghna rivers and establishing a 'Provisional Government of Bangladesh' with major objectives in Khulna and Chittagong. Subsequently, the task was enhanced to liberate the whole of East Pakistan. Bangladesh was divided into four regions by the Ganges, Brahmaputra and Meghna rivers: Western, North-Western, Northern and South-Eastern. The Indian military plan envisaged a multiprong offensive along each of the four sectors-2 Corps was to capture Jessore and Jhenida and subsequently secure Khulna and Faridpur in the Western Sector, while 33 Corps was to capture Bogra/Rangpur in the North-Western Sector. In the Northern Sector, 101 Communications Zone was to capture Jamalpur, Mymensingh, and secure Tangail with airborne forces. 4 Corps was to capture Sylhet, Daudkandi, Chandpur, and Chittagong in the South-Eastern Sector. Four mountain divisions were to remain deployed along the Chinese border. The Pakistan Army had deployed four divisions plus in East Pakistan-usually a division in each sector to deny significant ingress to the Indian Army. Its strategy was to hold firmly the cities and garrisons located along the major roads. The IAF had 11 Squadrons, while the IN had deployed an aircraft carrier, a destroyer, a submarine, and two frigates in the Bay of Bengal. Although the political leadership was confident that Beijing would not intervene militarily, the Indian Army was apprehensive about Chinese intentions and had deployed four divisions along the Northern borders. The Western Theatre was to adopt a holding strategy with contingency plans to execute limited offensive operations on orders. Accordingly, the Indian Army moved to the border progressively from the first week of October onwards to avoid any provocations to Pakistan. Western Command defended J&K and Punjab with 15 and 11

Corps respectively, deploying ten divisions, while the Southern Command held the deserts of Rajasthan Sector with two divisions. 1 Corps, with three infantry divisions, was responsible for Samba-Pathankot area's defence and launching of the counteroffensive in Shakargarh Sector. First Armoured Division was the Army Headquarters reserve and positioned in the general area Kotkapura near Ferozepore. It was to be employed for the offensive on orders. The Pakistan Army also had three Corps (1, 2, and 4) having ten infantry and two armoured divisions, besides three independent armoured brigades. The PAF had ten squadrons, while all the naval assets were deployed in the Arabian Sea. (Subrahmanyam, 1972, p. 360-361)

The objective of General Niyazi of the Pakistani Army was to prevent the Indian Army from reaching Dhaka. So he adopted a "Hedge-Hog" strategy for the defense of Dhaka. The biggest challenge before the Indian Army was the paucity of time. The Indian Army had to reach Dhaka in a very short time by penetrating the protective defense systems of Pakistan. General Arora's objective was to capture Dhaka with the help of the Indian Air Force and Indian Navy, destroying the Pakistani army assembled to defend Dhaka. For this it was most important to use the lightning schedule. The Indian Army's strategy was successful and it was able to penetrate all the security systems of the Pakistani Army and besiege Dhaka. (Palit, 1972, p. 99-101)

Through the special strategy 'War of Movement', the army wreaked havoc in the areas occupied by the enemies and captured itself. Even the Indian army had reached Dhaka. Under this special strategy, instead of entering East Pakistan (Bangladesh) directly, the focus was on village routes. That is, through small villages and villages, to free Bangladesh from the Pakistan Army. The villages were chosen because the army was taking less risk in this and this guess turned out to be correct, because the Indian Army had to face very little opposition in these areas. This strategy was very successful. The Indian Army and Bangladesh's Mukti Bahini fighters reached Dhaka without losing much time. After this, the army captured all the big cities occupied by Pakistan one by one. In this way Pakistan was forced to surrender. Although Pakistan had more army, but Pakistan had realized that if the war was drawn more, there could be more heavy losses.

The War, Surrender and Ceasefire

At 5.45 pm on 3 December 1971, Pakistan carried out airstrikes on several Indian Air Force bases located in the western sector, marking the beginning of the Indo-Pakistani War of 1971. The Indian Prime Minister declared war against Pakistan and recognized Bangladesh. On the night of December 4, 1971, the Indian Army launched attacks on the western and eastern positions of the Pakistani Army. The Indian Army made significant tactical gains in J&K, Punjab, and Rajasthan. It stoutly defended Poonch and Longewala

and advanced nearly 45 kilometers into Sind in Pakistan. It launched a major offensive on December 5, 1971, in the Shakargarh Sector and achieved reasonable success. The Pakistan Army made substantial progress in the Akhnoor sub-sector of the Jammu region, thereby forcing the Indian Army to retreat. The Indian Army launched the multipronged offensive in Bangladesh. It made rapid progress capturing many cities of Bangladesh and securing the Eastern bank of the Meghna River by 10 December. Bogra and Hilli fell by December 14 after stiff resistance. In the Eastern sector, after the capture of Daudkandi and Chandpur and Sylhet's containment, plans were modified to build-up forces across the Meghna River and posed a severe threat to Dacca. It was dominated by the Indian Air Force since the beginning of the war, while establishing a naval blockade in East Pakistan to prevent any Pakistani build-up in the region, including third-party intervention. The Indian Army withdrew two brigades from the Chinese border on 8 December to reinforce the northern sector and take advantage of the rapidly deteriorating situation. A parachute battalion was airdropped on the Eastern bank of the Jamuna River at Tangail on December 11. Another 4,000 troops were heli-lifted to supplement the forces across the Meghna River. By December 14, 1971, the Indian Army had mustered almost a division-sized strength for the final assault from multiple directions on Dacca. The Indian Air Force launched a successful airstrike at the Governor's house in Dacca on 14 December 1971. Pakistan could not organize a forceful defence of Dacca as the earmarked troops could not fall back. (Cheema, 2020, p. 8-10)

Seeing the rapidly deteriorating situation, the Pakistani Commander General Niazi started to feel immense psychological pressure to surrender. The Pakistan government was desperately looking for a UN-sponsored ceasefire to avoid the ignominy of surrender. It encouraged Niazi to continue fighting, assuring him of a direct military intervention by China and the USA. Nothing happened from the Chinese side. On December 13, 1971, the USA Seventh Fleet entered the Bay of Bengal. India carried out intensive bombings on naval assets in East Pakistan to render them unusable for the Seventh Fleet. The sinking of Pakistani submarine PNS Ghazi gave total freedom to IN's aircraft carrier INS Vikrant. (Jacob, 2011, p. 83-98) By the morning of December 16, nearly five brigades of the Indian Army had encircled Dacca, with four infantry battalions and an independent armored squadron entering the city by the afternoon. (Prasad & Thapliyal, 2014, pp 412)

A "Blatant Lie" turned out to be a reality at 4.31 p.m. on Thursday, the 16th December, 1971 when Niazi, the besieged defender of Dacca formally signed the Instrument of Surrender at historic "Racecourse" in Dacca.

Naval Action

The Western Command of the Indian Navy launched a surprise attack on the port of

Karachi on the night of 4-5 December 1971, codenamed Trishul. In these naval attacks, the destroyer PNS Khyber and the minesweeper PNS Muhafiz were sunk by the Osa missile boats and the PNS Shahjahan was also badly damaged. According to Pakistan naval sources, approximately 720 marines were either wounded or missing, Pakistan's fuel stores and many commercial vessels were also destroyed, making it more difficult for the Pakistan Navy to fight or stay in the war. Only after the attacks of INS Khukri, on the night of 8-9 December, there was another major attack on Karachi port which was codenamed Pathyan. The Indian Navy attacked the port of Karachi and destroyed several large fuel tanks and three Pakistani merchant fleets and one foreign ship.

On the eastern fronts of the war, the Indian Navy separated East Pakistan from West Pakistan's naval blockade in the Bay of Bengal. Due to this East Pakistan Navy and eight foreign commercial ships were also stuck there. Sea-Hawk fighter-bombers from the Indian Navy's aircraft carrier INS Vikrant attacked several coastal cities in East Pakistan. Pakistan's submarine PNS Ghazi was also sunk by the Navy near Visakhapatnam. Pakistan Marines have carried out a Riverine Warfare against the Indian Army, in which they had to suffer heavy losses. The main reason for which was his lack of experience in the wetlands of Bangladesh and ignorance about campaign warfare. According to Tariq Klee, a Pakistan expert, Pakistan suffered a total loss of its Pakistan Marines and nearly half of its navy perished in the war.

The Indian Navy performed exceptionally well in both the theatres. Indian Navy indeed achieved its primary objective by establishing effective supremacy over the Arabian Sea. Pakistan Navy remained bottled up in the sanctuary of Karachi harbor for the entire duration of war. Besides securing the safety of Indian merchant ships, the Indian Navy also enforced Contraband Control over the merchant ships approaching Pakistani harbours. In a way it could be called a two-front war and the Navy surrounded Pakistan from both sides. Indian Navy cut off their sea lines of communication and cut off their escape routes. Because of this, such a huge number of Pakistani soldiers had to surrender. By the end of the war, the Navy not only damaged Pakistan militarily but also broke it mentally. The credit for the brilliant naval campaign in the 1971 war goes to the then Navy Chief Admiral S.M. is given to Nanda. (Juneja, 1972, p. 152-161)

Indian Air Force in Action

Indian Air Force also gave a good account of itself. As a result of heavy attacks by the Indian Air Force, Pakistan took a defensive position. In total, IAF deployed twenty-eight fighter/bomber squadrons on the Western front and ten squadrons on the Eastern front during the War. Both India and Pakistani air forces conducted several attacks and counterattacks on the adversary to gain air superiority. IAF in all carried some 4300 offensive

missions, counter-air and interdiction operations, close air support missions, and recess. Besides containing the Pak Air Force offensive, the primary objective of the IAF was to destroy and disrupt their communication systems, destruct fuel dumps, and ammunition reserves, and contain her ground forces. IAF well achieved these objectives. Its performance, particularly on the Eastern front, was decisive as it achieved total air superiority over the enemy. The IAF supported the army resolutely in the crucial battles of Chhamb and Longewala. (Juneja, 1972, p. 63-72)

The IAF continued to perform a variety of tasks with success, such as bombing, keeping enemy soldiers away from actual targets, troop support, Para-dropping near enemy positions, air combat, deep penetration strikes and Reconnaissance. The PAF, which had focused only on airstrikes, had disappeared from continental skies by the first week of the war. Whatever Pakistan Army aircraft survived, they either took refuge in Iranian airbases or hid in concrete bunkers and escaped further attack. Pakistan Air Force had suffered heavy losses during the Bangladesh Liberation War.

"Blitzkrieg" techniques were adopted in Indian campaigns, under which the enemy was conquered quickly by spreading weakness in their places, avoiding their opposition. After suffering unbearable and heavy losses, the Pakistani forces surrendered within a fortnight and a fear and panic set in the minds of the military officers of the Eastern Command. The Indian Armed Forces created a psychological fear among the Pakistanis, which demoralized those Pakistani soldiers. After this, on 16 December 1971, Indian forces surrounded Dhaka and finally issued an ultimatum to surrender in just 30-minutes. Upon hearing this ultimatum, the Pakistani Eastern Command, led by its Niazi stationed in Bangladesh, surrendered. Pakistan finally declared a unilateral ceasefire on 16 December 1971 and handed over all its forces to the Indian Army. Thus the Indo-Pakistani War officially ended.

Conclusion

The war of 1971 is a golden chapter in the military history of India. The Indian Army showed the world the splendor of its might on land, water and in the sky. The same diplomatic strategy of India was revealed to the world, which had no answer to any enemy country involved in the war at the military and diplomatic level. The 1971 war between India and Pakistan will always remain immortal in military history. After this war which lasted from 3 December to 16 December, a new country named Bangladesh emerged on the world stage. The Pakistani army had succumbed to the courage and vitality of the Indian brave hearts. It is called India's biggest war victory ever. This was the first time after the World War II, when the army of a country surrendered with its 930,000 thousand soldiers in just thirteen days.

The military operation by the Indian Army for the liberation of Bangladesh has been

compared to the German Blitzkrieg strategy of Second World War. In the Bangladesh Liberation Campaign, the Indian Army forced Pakistan to kneel on both fronts with its coordinated war operations. Indian military strategists quickly won victory in their campaign using the coordinated use of all three parts of the army under the strategy of blitzkrieg. Due to this the Pakistani army had to suffer heavy losses and it surrendered in just 13 days.

The Indian Army carried out the most decisive liberation operation in the military operation within a short span of just 13 days. Bangladesh is one of the hardest-hit geographical regions in the world, where the limited amount of national highways and railway systems available were also destroyed by Pakistan's military. Despite this, the Indian Army advanced with incredible speed and forced 93000 soldiers of Pakistan to surrender. Most notable in this campaign was the Indian Army's incredible speed with which it moved across what is essentially a vast alluvial delta that was traversed by the Indian Army through rivers, streams, canals and creeks.

Journalists from the London newspaper The Sunday Times, present on all fronts of the war, wrote that it took only 12 days for the Indian Army to march all the way to Dacca, a feat reminiscent of the German Blitzkrieg in 1940. Both the campaigns had a similar strategy - speed, ferocity and flexibility.

During the war, the three armies had prepared to deal with every situation on all fronts so that China does not take any action in favor of Pakistan. The result was that Pakistan could not stand anywhere in front of the Indian Army on any front. Pak soldiers were trying to escape to a safer area through the American ship. Complete preparation was done for this but its secret code was in the hands of India. Because of this, Pak soldiers could not even run away. There was tremendous coordination between the three armies. Because of this, Pakistan did not understand how to compete. All the bridges from where Pak Army could advance were bombed and destroyed. A port near Dacca was completely destroyed. Overall, the Indian Army had hoisted the flag even before the Pakistan Army could understand. It is meant to say that the better coordination between the three forces resulted in Pakistan being brought to its knees within just 13 days.

This was the first war in which India's own intelligence resources provided information about Pakistan's every move. Indian intelligence agency RAW also had an important contribution in the success of this campaign. Indian military strategists even before the start of the war had detailed information about the enemy's military bases, and their targets.

A special aspect of the Bangladesh Liberation Campaign was the smooth functioning of the press on the eastern front of the war. From the beginning of the war, the international press had created an atmosphere of worldwide sympathy for the aims and achievements

of the Indian Army. The international media created the image of the gallant Indian soldier as a disciplined, professional, determined, taking pride in his work, calm in battle, fighting the war with full faith in his superiors and the generals who led him.

The two-nation theory, which was used as a weapon by the leaders of the Muslim League, spread the poison of communalism among the Muslims in such a systematic way that great India was divided into two parts in 1947. But after 24 years of independence, Pakistan built on the basis of religion also got divided into two. It became clear that religion alone cannot hold people together; it requires tolerance, liberality, justice and humanistic outlook.

The firm and confident handling of the Government of India was perfectly matched by the high quality of management, direction and leadership of the Indian Army. The will power of the Government of India and the very successful and brilliant strategy adopted by the generals and the bravery of the soldiers was the biggest reason for the success in this war. Within the first five-six days of the war, the Indian Army had complete control over the war and troops entered Pakistan and occupied hundreds of kilometers. Pakistan's Navy was destroyed at the port of Karachi itself. This victory of India established a new record in the world. The victory in the war of 1971 was the victory of humanity over inhumanity, justice over injustice.

The War of Liberation, as it is called in Bangladesh, will go down in human history as a unique event. In fact, it was the dominance of Bengali nationalism over Islamic nationalism that rejected the religiously based 'two nation theory' of partition from India.

Hero of the Indian Army General Sam Manek Shaw, General Jagjit Singh Arora, General JFR Jacob and General Sujan Singh Uban, who led India to a spectacular victory against Pakistan, The names were also respectfully inscribed in history forever. It is really important to underline that among these three generals, one was a Parsi, two were Sikhs and one was Jewish. There can be no better proof of Indian faith in secularism than this.

Finally, the historic perspective; India has created a new country Bangladesh in the world due to its military strategy without taking the help of western countries. In this war, the honor of the Indian Army increased in front of the whole world. The extraordinary combat performance of the Indian Armed Forces in the war had restored its prestige, self-confidence, and dignity lost during the war with China.

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Crop Residue Management Subsidy Scheme in Haryana: A Review

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Abstract

Incentivizing responsible crop residue management among farmers is crucial to encouraging sustainable agricultural practices, dealing with environmental concerns, and contributing to the overall socio-economic development of the region, all of which are reasons why the Crop Residue Management Subsidy Scheme deserves attention. Descriptive research and secondary data from a variety of academic sources (such as research papers and publications) are used to evaluate the scheme's influence on sustainable agriculture in Haryana and draw conclusions about its efficacy. The findings demonstrate a sophisticated comprehension of the consequences of stubble burning while revealing the complex and diverse characteristics of the subsidy initiative at the same time. The study highlights the need for ongoing assistance and targeted interventions to enhance the efficiency of the program, therefore aiding evidence-based policy formulation and promoting long-term agricultural growth in the area.

Keywords: E-banking, Awareness, Customer satisfaction, Services quality

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Introduction

Although straw burning is an established custom in the sub-region, it is crucial to acknowledge that not all straw waste is incinerated in the field. Crop straw is a versatile agricultural residue that contains a significant amount of fiber, lignin, carbohydrates, proteins, enzymes, and nutrients. Consequently, it finds use in several sectors such as fertilizer production, fodder supplementation, bioenergy generation, base stock utilization, and industrial material sourcing, among others. The use of agricultural leftovers varies among countries and is influenced by factors such as socioeconomic position, the kind of produced crop, and the number of crops planted annually. Historically, agricultural wastes in the subregion have been used for several purposes that sometimes compete with one another, including feed for animals, fuel, fodder, roof thatching, packing, and composting. Recent years have seen a rise in the importance placed on using agricultural waste to provide feedstock for the manufacturing of renewable energy and other vital commodities. In response to the growing prevalence of agricultural residue burning, governmental authorities have implemented and advocated for several strategies to mitigate this issue. Various methodologies have been used, including the utilization of agricultural wastes, with a particular emphasis on cereals, for multiple purposes such as feed, fuels for bio-thermal power plants, mushrooms growing, bedding material for cattle, bio-oil production, paper manufacturing, and biogas generation. Further potential uses include the incorporation of paddy straw with soil, utilization in energy methods, and deployment in thermal combustion procedures (Erenstein, 2011).

Crop residue management is defined in this review paper as "a strategy for applying above-ground residues produced by previous crops to the soil." The outcome is controlled by the interaction among two variables: the utilization of residue from crops (either through retention or export) with the precise technique of soil tillage applied. This difference is essential because the amount of soil tillage performed by the tillage tool's method of operation disperses residues differentially across the soil profile. The type of residue management adopted has a substantial influence on many soil features, including soil structure, the amount of organic matter (both total quantity and its distribution throughout the soil profile), and many other soil characteristics.

These impacts can be observed in changes to soil porosity, hydraulic characteristics, air diffusion capacity, as well as ultimately crop yields. These changes occur due to alterations in nutrient availability and microbial life within the soil (Bronick, & Lal, 2005). Nutrient leaching is reduced because crop wastes provide a storage media for plant nutrients. The cation exchange capacity (CEC) may be increased, an environment favorable to biological nitrogen fixation can be created, microbial biomass can proliferate, and enzymes like dehydrogenase and alkaline phosphatase can work more effectively thanks to the presence

of these compounds. The increase in biomass from bacteria can enhance the presence of minerals in soil, while simultaneously acting as a storage and source of plant nutrients. The practice of equally distributing significant quantities of crop residues over the soil surface has been shown to have many beneficial effects. These include protection against wind and water erosion, better water penetration and moisture retention, and less sediment and water runoff (Sharma, 2016).

1.1 Schemes and Initiatives by Haryana Government

The Government of Haryana has initiated the Haryana Krishi Yantra Anudan Yojana, aimed at offering a subsidy ranging from 50% to 80% for agricultural equipment to farmers residing inside the state (Saxena, et al., 2021).

- 1 The Haryana government has initiated a program called "Mera Pani Meri Virasat" to encourage a shift away from the cultivation of rice crops towards the cultivation of other crops. According to this proposed policy, farmers would get an incentive of Rs. 7000 per acre.
- 1 The state has been divided into three zones red, yellow, and green to better track fire activity and control the burning of agricultural leftovers. This classification is based on the data acquired from the Haryana Space Applications Centre (HARSAC). Sirsa, Jind, Fatehabad, Karnal, Kaithal, as well as Kurukshetra are all in the "red zone" because of their high fire event counts.
- 1 In 2021, the government of Haryana formulated a plan to provide a sum of one thousand rupees per acre towards the implementation of rice straw management for crop leftovers.
- 1 To effectively use 640,000 metric tons of paddy straw, six Biomass Power Projects are now under construction, together with a capacity of 60.35 megawatts.
- 1 Haryana's government has also developed a plan to convert 2 lakh metric tons of rice straw into ethanol.

The observation reveals a tendency among machine operators to prioritize operating in the districts along the GT route first, before afterwards shifting their focus towards the Sirsa-Fatehabad belt for agricultural harvesting purposes. Consequently, there is a noticeable disruption in the agricultural harvesting cycle within the state. Consequently, the government has instructed the nodal personnel at the level of the village to guide farmers about the implementation of a staggered harvesting schedule.

2. Review of Literature

2.1. Crop Residue Management Practices

In the agricultural sector of India, many crop waste management strategies have been suggested to facilitate the use of cleaner production options. India is a significant producer of many crops, including rice, wheat, and pulses. As a result, after harvesting these crops, a great deal of agricultural waste is produced. Historically, rice straw was widely utilized for roofing in rural areas. However, with the progression of technologies and the rise in economic levels, the usage of rice straw for this purpose has seen a decline in recent years. The decline in the market for straw as a feed source has also led to challenges in managing crop leftovers for farmers in the state of Haryana (Bhattacharyya et al., 2021). Therefore, novel techniques are necessary to effectively handle agricultural remnants. The effective usage of agricultural leftovers has the potential to result in a 25% reduction in coal consumption, contributing to the mitigation of emissions from coal-fired power plants. Solar-powered COVID care centers were recently established in Bihar and Jalandhar, using Agribiopanel panels manufactured from agricultural residue.

In 2018, the Ministry of Agriculture and Farmers' Welfare offered several new options for the ecologically benign, economically viable, and sustainable use of agricultural wastes. Ex-situ and in-situ crop residue management are two possible techniques for dealing with crop residue. Composting, bio-char production, manufacturing of biofuel, energy generation, and usage as animal feed are some of the most common ex-situ management applications. There exists a wide array of machinery and equipment that are readily accessible to manage crop residue on-site:

- 1 **Super Straw Management System (SMS):** Standing rice straw is shredded during harvest, and this equipment may be added to a combination harvester to help disperse the shredded material evenly. It's useful for growing the following harvest without risking a fire in the field. Punjab Agricultural University (PAU), Ludhiana created this equipment, and it may be purchased for around Rs 1.2 lakh.
- 1 **Chopper and Spreader:** After using combine harvesters, the leftover straw may be chopped, sliced, and distributed with the use of a chopper & spreader machine before being utilized in various seeding methods.
- 1 **Rotavator, Plougher, and Zero Till:** To prepare the soil for planting paddy seeds, a rotavator is utilized to shred rice straw into tiny pieces, and a plough is then used to till the soil. The zero till machine's seed box, fertilizer box, its furrow opener all work together to eliminate the necessity for preparing a seed bed before planting wheat.
- 1 **Turbo Happy Seeder:** The harvester's blades may be used to plant wheat seeds into

the ground, and the equipment can also be used to harvest the crop. The chopped straw can then be utilized as organic matter in the soil. By putting a stop to the practice of burning off stubble, a great deal less particulate matter, carbon monoxide, and black carbon is released into the atmosphere. One Turbo Happy Seeder would set you back roughly Rs 1.3 lakh, and it will aid in boosting soil health.

2.2. Impact of Crop Residue Management on Crop Production

There are several direct and indirect impacts and interactions that contribute to the overall complexity and variability of residue management's impact on crop productivity. An illustrative instance of a direct impact may be seen in the hindrance of crop emergence owing to the presence of residues over the surface of the soil. The addition of organic matter through leftovers may alter the soil structure and, in turn, alter the development of the root system. This is an example of an indirect influence.

The productivity of crop production is significantly influenced by several environmental conditions. The parameters included in this range include soil water content, organic matter composition, nutrient availability, variety of ground cover, microbial life activity, and soil structure. The aforementioned factors undergo temporal changes, as does the crop's responsiveness to such variables. Hence, the impact of residue management may exhibit variability throughout distinct stages of plant growth. For instance, variations in the assimilation and retention of nutrients may be discerned throughout the growth cycle of several plant components, spanning from the first stages of germination to the last stage of production. It is important to acknowledge that the significance of crop leftovers extends beyond their mere existence and placement; the specific kind of crop residues as well as the succeeding yearly crop also play a crucial role. Every crop variety needs a distinct set of management practices. Harvesting sugar beet with minimal tillage poses more challenges compared to harvesting wheat (Hiel, et al., 2016).

The Haryana government has developed the Haryana Bioenergy Policy 2018 to effectively use its excess agricultural waste for the production of bio-CNG, bio-manure, and biofuel. The proposal aims to attain a goal of generating 150 MW of electricity using biomass sources, or an equal alternative, by the year 2022. Efforts to locate and award contracts to biomass power stations with a combined 50 MW capacity have been spearheaded by the Haryana Renewable Energy Development Authority (HAREDA). These initiatives are located in the Fatehabad, Kurukshetra, Jind, and Kaithal areas and use the usage of 100% paddy straw technology. Approximately 0.3 million metric tons of yearly agricultural waste may be used effectively by biomass power plants (Sharma, 2011).

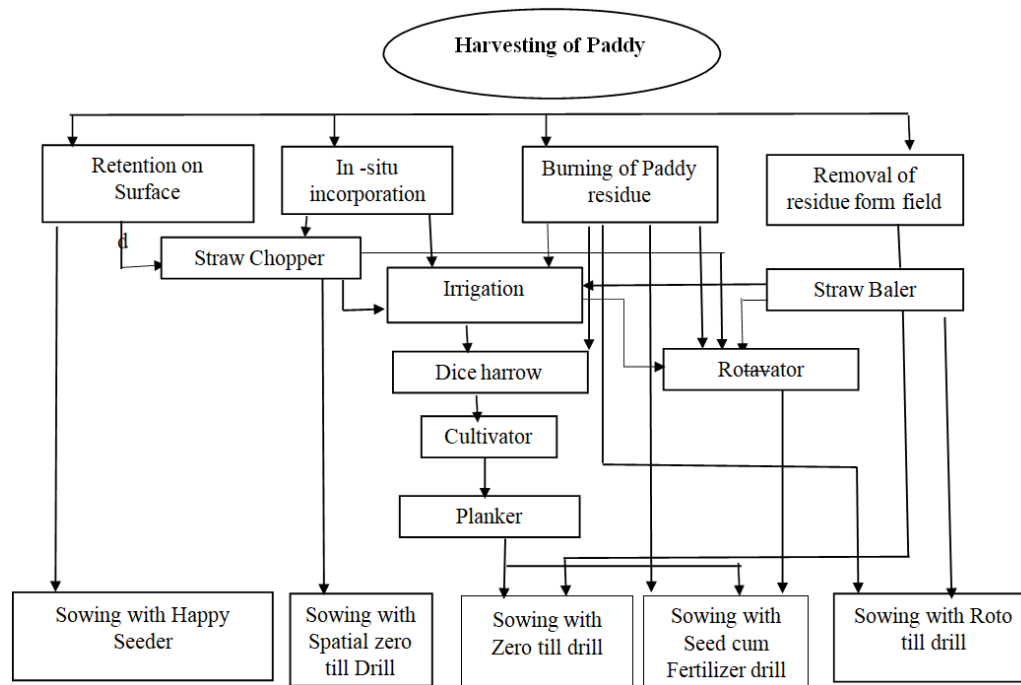


Figure 1: Different Opportunities to Manage Crop Residues

Source: Lohan, et al. (2018)

2.3. Government Policies on Crop Residue Management

India is a country that has a significant corpus of legislation concerning environmental pollution. The subject currently being examined has been the subject of extensive discourse in numerous academic contexts, involving experts from the disciplines of engineering, science, and environmental studies, and governmental bodies who possess a comprehensive understanding of the adverse impacts of this practice on human welfare, soil quality, fertility, and the natural environment. India has implemented a comprehensive framework consisting of eleven significant laws to regulate and mitigate pollution. These laws are supported by different forums that facilitate their effective implementation through diverse approaches. The objective behind the establishment of these regulations was to enforce strategies aimed at safeguarding the environment from various forms of pollution resulting from industrial and agricultural practices. The Government utilizes Section 144 of the Civil Procedure Code (CPC) as a measure to deter the practice of burning straw and paddy. However, the enforcement of this regulation is notably lacking, and there is a dearth of initiatives aimed at raising awareness among farmers about this issue (Krishna, & Mkondiwa, 2023).

To promote consistency in the handling of crop residue throughout the nation, a comprehensive National Policy for Management of Crop Residue (NPMCR) was established and distributed to all fifty states. The primary objective of the policy is to mitigate the practice of agricultural residue burning via the provision of incentives for the use of advanced machinery that minimizes the amount of trash left behind in the fields. The strategy also promotes the development of agricultural residue pellets and briquettes for gasification, among other potential applications. Legislation enacted to reduce pollution includes the Air Prevention and Control of Pollution Act (1981), the Environment Protection Act (1986), the Environment (Protection) Rules (1986), the National Environment Tribunal Act (1995), and the National Environment Appellate Authority Act (1997). The Haryana State Pollution Control Board (HSPCB) has started several initiatives to reduce industrial pollution in the state. However, not much has been done to reduce agricultural pollution. Following the guidelines set out by the National Green Tribunal, the state government must use appropriate measures of coercion and penalties, such as initiating legal proceedings, in response to the ongoing practice of residue burning by the offender (Bhuvaneshwari, et al., 2019).

The Government of Punjab has made it mandatory to install a Short Message Service (SMS) attachment on all newly manufactured combine harvesters to comply with a ruling from the prestigious High Court of Punjab and Haryana regarding the control of burning residue. In the fiscal year 2016-17, the Haryana Government initiated legal proceedings against a total of 1406 individuals who were found to violate regulations about the burning of paddy residues. As a result of these actions, a sum of \$20,522 was successfully collected as fines from farmers who persistently disregarded the directives on this matter (Sheikh, 2022).

The study examines the substantial importance of the Crop Residue Management Subsidy Scheme in Haryana, to evaluate its influence on the adoption of sustainable agricultural methods. The first part of its content provides a background for understanding the design and why it is important. The research methodology describes the study's overall approach, data collection methods, and scope in great detail. The present discourse undertakes a critical analysis of the data, with a particular focus on highlighting the socio-economic and environmental advantages. The conclusion section serves the purpose of summarizing the main findings and significant aspects of the study, while also acknowledging any limitations that may have been encountered throughout the research process. Additionally, it offers suggestions for potential changes or areas of further investigation that might enhance the study's overall validity and contribute to the advancement of knowledge in the field. This paper presents a delineation of potential avenues for future research, which aims to guide

further investigations. On its whole, this work makes a valuable contribution towards the comprehension and improvement of the Crop Residue Management Subsidy Scheme, providing valuable insights for policymakers and researchers in the field of sustainable agriculture.

3. Objectives

- 1 To find the impact of crop residue management on crop production.
- 1 To assess the impact of the subsidy scheme on reducing crop residue burning incidents in Haryana.

4. Methodology

The research methodology used in the study on the Crop Residue Management Subsidy Scheme in Haryana is descriptive. The data-collecting strategy used in this study is centered on the utilization of secondary sources, namely research papers and articles. These sources are utilized to analyze the influence and efficacy of the subsidy plan on the promotion of sustainable farming practices in the region of Haryana. The use of this qualitative methodology enables a comprehensive analysis & understanding of the topic, emphasizing pre-existing viewpoints and establishing a foundation for well-informed suggestions to policymakers and agricultural participants within the area. The objective of the study is to provide a comprehensive analysis of the achievements, obstacles, and prospective enhancements of the subsidy program. The study will contribute to a more nuanced comprehension of the program's effectiveness in encouraging responsible management of crop residue. Through an in-depth exploration of these facets, the study aims to provide significant suggestions for policymakers, farmers, and other relevant actors engaged in agricultural activities in Haryana. Ultimately, this endeavor aims to foster the advancement of sustainable agricultural policies and practices in the area.

5. Discussion

i. To find the impact of crop residue management on crop production.

Both the presence and absence of residues, as well as their precise location within the soil profile, affect the emergence of crops. When soil crusts owing to high humidity and frequent precipitation and there are no surface residues, germination quality is reduced (Gallardo-Carrera et al., 2007). Crusting is more prone to occur in soils with lower organic matter content, as shown by (Pagliai et al. 2004), in conjunction with the action of raindrops. This scenario is particularly evident when there is a constant export of agricultural waste.

Residues present in the uppermost layer of the soil might provide challenges throughout soil preparation and hinder the emergence of crops. The frequency of non-intrusive tillage techniques in the United Kingdom was thoroughly investigated by the writers. Agricultural

leftovers on the ground provide difficulty for drilling machinery when they are disconnected from their roots. The presence of an obstruction inside the drilling machine might result in reduced crop density, hence hindering crop output from the first stages.

The presence of waste from agriculture above seeds might slow or even prevent crop emergence, forcing the developing plants to find a way to work around the fragments (Arvidsson & Håkansson, 2014). In Oregon greenhouse studies, (Wuest, et al. 2000) showed that crop emergence is hindered when residues exist over the winter wheat seeds (as in no-tillage procedures) or scattered about the seeds (as in reduced-tillage methods). The delay is due to obstacles encountered by the coleoptile on its way to the surface of the planet. In their comprehensive analysis of no-tillage practices in Europe, (Soane et al. 2012) observed that the cultivation of spring-sown crops may experience delays in cold and wet circumstances owing to heightened soil moisture and low temperatures caused by the accumulation of crop residue on the soil surface. According to (Børresen, 1999), the presence of residue cover may result in a decrease in soil temperatures by up to 2.5 °C. Many elements, including increased solar reflection, decreased evaporated form, and the insulation effect of the residue layer, contribute to this phenomenon. In contrast, in regions of southern Europe characterized by arid circumstances, the situation is reversed. Increased accessibility to water for crop growth occurs in regions where residue cover is present because of the greater capacity of the soil to hold on precipitation. However, it is important to note that inadequate seed-to-soil contact has the potential to cause a delay in crop emergence, particularly in arid environments. This may provide challenges in accurately predicting the resulting impact.

Seed emergence is influenced not only by abiotic variables but also by the biotic environment. The presence of residue cover has been shown to provide a conducive environment for slugs (Christian et al., 1986), and there is a potential association with the proliferation of plant diseases. Straw has the potential to serve as a reservoir for plant diseases. Incorporating rotations into the system of agriculture is crucial for low or no-tillage methods that retain residue. The occurrence of pathogen-related issues is more probable in monoculture or cereal-only crop rotation systems due to the continuous cycle of infections. Seeds that come into close touch with straw may be susceptible to phytotoxicity. According to the findings of (Wuest et al. 2000), it was shown in their pot experiment that the placement of agricultural residues underneath winter wheat seeds might potentially hinder development owing to the roots having exposure to the residues, which could serve as a source of infections or phytotoxins. According to (Morris et al. 2010), there exists a correlation between the duration of residue decomposition and planting of crops and the resulting phytotoxic impact. Specifically, their findings indicate that a longer duration is associated

with less effect.

The study indicates that agricultural residue management may have both positive and negative effects on yield, however, other research has shown no effect. According to many studies, weather is the single most significant factor influencing crop productivity.

ii. To assess the impact of the subsidy scheme on reducing crop residue burning incidents in Haryana.

To reduce the negative effects on soil quality, and the well-being of people, the federal and state governments have established several regulations and programs, including those listed below. The Indian government set up a 166 million USD incentive in 2018 to promote the use of mechanized agricultural residue management. The central government of India reported spending \$75 million in a single year to promote mechanization of agriculture over in-situ crop residue management throughout Haryana, Punjab, Uttar Pradesh, and Delhi, to accomplish 0.8 million hectares of happy seeder or no-tillage adoption in north-west Indian states. Based on studies, analyses, and experiments, he claims that his efforts have boosted profits by over \$131 million compared to traditional methods of waste disposal (Reddy, & Chhabra, 2022). In 2019, a comprehensive measure was introduced to address the issue of residue burning, whereby a total prohibition on this practice was enforced. Additionally, monetary penalties were imposed on farmers who persisted in the customary practice of residue burning, and in some cases, imprisonment was also used as a punitive measure. In addition to this, the Supreme Court has mandated certain northern states to provide a monetary compensation of 2,400 rupees per acre to farmers who refrained from engaging in residue-burning activities.

According to (Barman and Mukhopadhyay 2020), to physically collect residue, farmers would need a budget of 6000-7000 rupees per acre. However, to allocate this budget for other related tasks, farmers often choose to burn the residue in the field, since this method does not involve any additional costs. In recent times, the Punjab government has undertaken the distribution of 2400 tractors equipped with happy seeders, intending to address the issue of paddy stubble removal while simultaneously facilitating the sowing of wheat seeds. However, it is worth noting that these tractors may not be universally accessible or compatible with all regions.

For them to use a happy seeder, a farmer is required to allocate a sum of 100 rupees for rental expenses and an additional 2000 rupees for fuel consumption per acre. In the region of Punjab, the total land area dedicated to paddy cultivation spans around 75 lakh acres. To effectively address the management of residues throughout this extensive acreage within a 15- day duration, an estimated 50,000 happy seeders are deemed necessary. However, it is worth noting that the government has only granted a quantity of 24,000 happy seeders,

which falls short of the required number. In addition to this, farmers express concerns over the sowing process and poor germination rates in wheat when using a happy seeder. Additionally, another piece of equipment known as a straw baler was suggested, which is designed to compress straw into tightly packed bales and remove them from the field. The technique required one hour of labor per acre but produced just 12-15 quintals of bales, making it unfeasible.

In a single day, 10 acres of land are cultivated. A paddy-straw chopper-cum-spreader is a piece of equipment used to shred stubbles and distribute them throughout a field. Planting wheat is simplified by this method. Incentives in the way of subsidies during the acquisition of equipment are necessary to encourage the adoption of automation for handling residue among farmers. The governments of Haryana and Punjab have been ordered by the Supreme Court to compensate marginal and small-scale farmers 1000 rupees per quintal of straw for the disposal of agricultural waste. With an average production of 25.6 quintals of straw per acre, this equates to around 2560 rupees for each farmer. Regrettably, farmers have expressed their dissatisfaction about not obtaining the aforementioned quantity (Barman and Mukhopadhyay, 2020).

In the fiscal year 2019-20, the government of Punjab committed a budgetary amount of 19 crore rupees to provide financial assistance to a cohort of 29,343 small and marginal farmers who are actively involved in the production of non-Basmati rice. Two thousand five hundred rupees per acre was offered as financial aid to these farmers on the condition that they refrain from burning rice stubbles (PTI 2019). Budgeting 591.65 crores in 2019, the Cabinet Committee for Economic Affairs is subsidizing farm equipment to increase the usage of agricultural machinery for better managing crop stubbles and lowering air pollution. These efforts have been created to accomplish just such aims. Protection of the environment, lessening of nutrient loss, and shielding of soil microorganisms from the hazards of on-site burning of stubble.

- 1 Stubbles from crops are retained and plowed back into the ground with the use of sophisticated machinery, which is a practice that is being actively encouraged.
- 1 Due to the high cost of the equipment necessary for in-situ crop residue management, it is recommended that farm machinery banks be promoted for usage in this regard (MOA& FW 2019)
- 1 The aforementioned government scheme provides a 50% discount on turbo happy seeders. The Indian states of Haryana and Punjab were given happy seeders in 2018-20, and it was discovered that they were able to effectively remove crop stubble that covered 92% of the paddy field in each state (MOA& FW 2019).

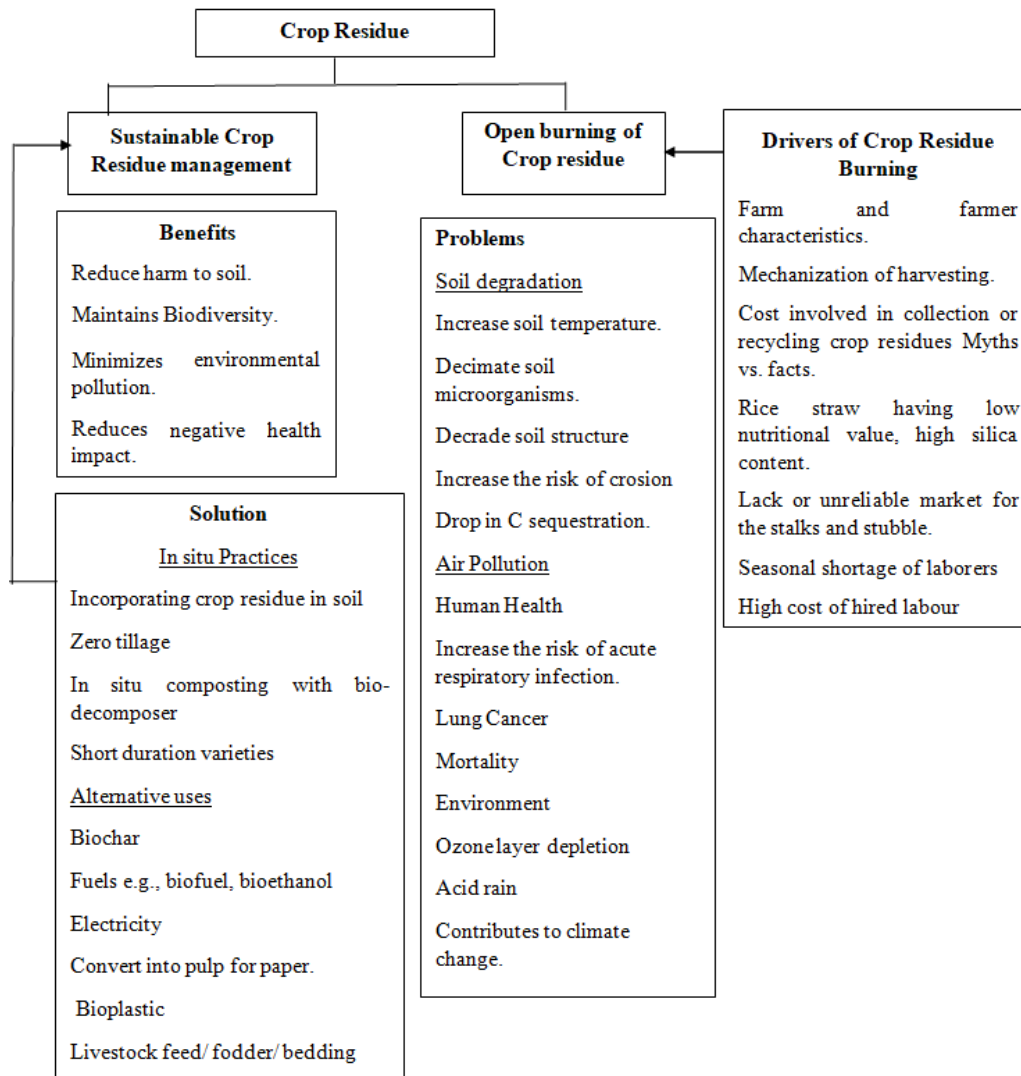


Figure 2: Effect And Solutions to Crop Residue Burning

Source: Self-Preparation by Author

Conclusion

The study concludes that the Crop Residue Management Subsidy Scheme in Haryana is very important and has far-reaching ramifications for environmentally responsible farming methods. The existing study highlights the scheme's potential benefits and possible difficulties. Although the subsidy has shown promising results in advancing environmentally sound agricultural residue management and encouraging a more sustainable Haryana, there may be room for improvement in a few key areas. The findings indicate the need for

ongoing governmental assistance and strategic actions to tackle the identified obstacles and enhance the scheme's efficiency. The review paper proposes an adaptable and comprehensive strategy for Haryana to improve its agricultural practices. It emphasizes the integration of knowledge from many sources to guarantee the long-term effectiveness of the Crop Residue Management Subsidy Scheme. The paper enhances the current knowledge base by presenting a comprehensive analysis of the scheme's results and practical suggestions for policymakers as well as stakeholders who are committed to promoting the sustainable growth of the agriculture sector in the area.

7. Future Scope of the study

The future scope of the study about the Crop Residue Management Subsidy Scheme in Haryana entails the identification and resolution of the inherent constraints present in the study. The examination offers valuable insights into the impact of the scheme on agricultural sustainability in Haryana. However, future research could explore more specific parameters, such as the socioeconomic factors that influence farmers' acceptance of the program of subsidies or the ecological consequences of various crop residue management practices. By delving into these many aspects, a more thorough and nuanced understanding of the success of the Crop Residue Management Subsidy Scheme may be achieved. This, in turn, would provide valuable insights for the formulation of more focused policy suggestions aimed at promoting sustainable agricultural growth in the state of Haryana.

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Economic Inclusion through Digital Economy: A Study of Delhi NCR

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Abstract

Through this study it was investigated how the rise of the digital economy has affected social mobility; how digital technologies have shaped the contemporary economy by underlying the opportunities and threats associated to its and how the digital divide affects various demographics and gives an outline of approaches to closing the gap. In order to address the digital divide and create a digital economy that is accessible to all, it is important to take a close look at the opportunities presented by digital technologies for fostering inclusion, such as the creation of new jobs, the introduction of novel ideas, and the enhancement of existing public services. To learn how government policies, affect the digital economy and the link between digital economy and social inclusion.

A sample of 120 respondents, having different demographic features, from Delhi NCR was selected for the study and self structured questionnaire was administered through snowball sampling technique than for collecting the respondent data the appropriate statistical technique were used to analyze the responses of respondents. The government policies were found to be having a positive impact on an adaption and expansion of digital economy in the country. Further, a high degree of positive correlation was found between the digital economy and digital inclusion.

Keywords: Digital Economy, Inclusion, Technology, Digitalization, Government policies

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Introduction

The term 'digital economy' refers to the economic activity that occurs as a direct consequence of the billions of daily online interactions that take place between individuals, companies, gadgets, data, and other processes. Traditional sectors have been upended by the digital economy, which has resulted in the development of new business models and altered the ways in which we work and live. Initiatives to promote digital inclusion are being developed by politicians and companies to address the digital gap, which has led to a new type of inequality. It is necessary to take measures to guarantee that the advantages of the digital economy are accessible to all respondents, irrespective of their socio-economic standing or location in the world. The "digital divide is the gap that occurs between those who have access to digital technology and those who do not," which has grown wider over the last several years. Digital economy disadvantages a small percentage of the population. "Chib, A., & Alampay, E. (2019)"

Digitalization and the digital economy have become increasingly important in recent years, transforming the way respondents live, work, and interact with one another. Digitalization refers to the adoption and integration of digital technologies in various aspects of society, including business, government, and everyday life. The digital economy, on the other hand, encompasses all economic activities that rely on digital technologies, such as e-commerce, digital payments, and online platforms. The growth of the digital economy has been rapid and pervasive, with digital technologies now touching nearly every aspect of the global economy. This transformation has been driven by advances in technology, including the internet, smart phones, and cloud computing, as well as changing consumer preferences and behaviors." Akhtar, N., & Aslam, A. (2019)".

While "the digital economy offers numerous advantages, such as higher production and efficiency, it has also introduced new difficulties and disparities. The digital gap, which refers to the uneven distribution of access to digital technology and the internet, is one of the biggest problems." This has led to concerns about social exclusion and economic inequality, as those without access to digital technologies are at a disadvantage in terms of employment, education, and access to services. Therefore, it is important to understand the opportunities and challenges presented by digitalization and the digital economy, and to identify ways to ensure that these technologies are accessible to all, regardless of socioeconomic status or geographic location. This requires examining the role of government policies and initiatives, as well as the impact of digitalization on different sectors of the economy and society." Das, S., & Jindal, A. (2020)"

The concept of digitalization and digital economy has gained widespread attention in recent years, with the increasing adoption of digital technologies in various sectors. The digital

economy is an emerging market that comprises a range of economic activities related to the production, distribution, and consumption of digital goods and services. However, the benefits of the digital economy are not evenly distributed across society, and there is a growing concern about the potential for a digital divide to exacerbate existing inequalities. Inclusion is an essential aspect of the digital economy, as it ensures that the benefits of digitalization are accessible to all members of society, regardless of their socioeconomic background or geographic location. Digital inclusion refers to the process of ensuring that everyone has access to and can effectively use digital technologies to participate fully in society and the economy. Inclusive digital economies have the potential to promote economic growth, increase productivity, and enhance social welfare by enabling greater access to education, healthcare, financial services, and other public goods. The digital economy and digital inclusion may have certain advantages, but there are also some issues that need to be resolved. Infrastructure, cost, digital literacy, data protection, and legal frameworks are a few of these concerns. Therefore, it is crucial to understand the interplay between digitalization, the digital economy, and inclusion to develop effective policies and strategies that ensure equitable access to the benefits of digital technologies.

Review of Literature

(Kumar & Singh, 2018) analyzed the impact of the Digital India initiative on inclusive growth in India. The authors reviewed several studies that have examined the various components of the Digital India program, including digital infrastructure, digital literacy, and digital services. They also discussed the potential benefits of digital inclusion, such as increased access to education, healthcare, and financial services, as well as potential challenges and barriers to inclusion, such as lack of internet connectivity and low digital literacy rates. The study concluded that the Digital India initiative has the potential to promote inclusive growth in India, but careful consideration of the challenges and opportunities is necessary to ensure its success.

(Srivastava & Shrivastava, 2020) examined the current state of the digital economy in India, highlighting the opportunities and challenges associated with its growth also examined the various components of the digital economy in India, including e-commerce, fintech, and digital payments. They also discuss the potential benefits of the digital economy, such as increased efficiency and productivity, as well as potential challenges, such as data privacy concerns and regulatory issues. The study concluded that the digital economy has the potential to transform India's economy, but careful consideration of the challenges and opportunities is necessary to ensure its sustainable growth.

(Chaturvedi & Singh, 2021) the study examined the impact of various digital inclusion initiatives in India, such as the Digital India program and the National Digital Literacy

Mission. They also discuss the potential benefits of digital inclusion, such as increased access to information and services, as well as potential challenges, such as unequal access to technology and low digital literacy rates. The study concluded that digital inclusion is a key driver of inclusive growth in India, and that continued investment in digital infrastructure and literacy is necessary to ensure its success.

(Dutta et al., 2020) conducted an exploratory study on digital economy and inclusion in India. The authors examine the potential benefits of digital inclusion, such as increased access to financial services and employment opportunities, as well as potential challenges, such as low digital literacy rates and unequal distribution of resources. They also discussed the role of government policies and programs in promoting digital inclusion, such as the Digital India campaign and the Pradhan Mantri Jan Dhan Yojana. The study concluded that digital inclusion is critical for promoting inclusive growth in India, and that more research is needed to understand the barriers to inclusion and develop effective policies and programs to address them.

(Khan, 2019) explored a number of studies that have explored the link between digital inclusion and economic development in India, as well as the probable processes that are at the root of this link, such as higher productivity and access to financial services. The study came to the conclusion that digital inclusion has the potential to contribute to economic growth in India; however, additional research is required to understand the specific mechanisms that contribute to digital inclusion and to develop policies that are effective in promoting digital inclusion.

(Garg & Sharma, 2019) the study reviewed the policies and programs implemented by the Indian government to promote digital inclusion. The authors examined several key initiatives, such as the Digital India campaign, the National Digital Literacy Mission, and the BharatNet project, and evaluate their effectiveness in promoting digital inclusion. They also discussed the potential challenges and barriers to implementation, such as limited resources and low demand for digital services in rural areas. The study concluded that while these policies and programs have the potential to promote digital inclusion in India, more work is needed to address the challenges and ensure their success.

Bose, D., &Gogoi, R. (2019) investigated the connection that exists between India's digital economy and inclusive economic development. E-commerce, digital payments, and digital infrastructure are some of the aspects of the digital economy that are investigated and discussed by the writers, along with the possible advantages and difficulties associated with each aspect of the digital economy. They also examined several studies that have been conducted to investigate the impact of digital economy on inclusive growth in India, and they come to the conclusion that careful consideration of the challenges and opportunities

is necessary to ensure the success of digital economy initiatives in promoting inclusive growth.

Das, S., & Jindal, A. (2020) examined the role of education and gender in promoting digital inclusion in India. The authors reviewed several studies that have investigated the relationship between education, gender, and digital inclusion, and explore the potential barriers to digital inclusion faced by women and girls in India. They concluded that education is a key driver of digital inclusion in India, and that more research is needed to understand and address the specific challenges faced by women and girls in accessing digital technologies and services.

Jhunjunwala, A., & Ramaswami, S. N. (2019). In this study it is examined that the Digital India initiative in India, with a focus on the role of technology and policy in promoting digital inclusion and economic growth. The authors reviewed several studies that have investigated the impact of Digital India on various components of the digital economy, including digital infrastructure, digital literacy, and digital services. They also discussed the potential benefits and challenges of Digital India, and provided recommendations for policymakers to ensure the success of the initiative in promoting digital inclusion and economic growth.

Venkatraman, S., & Dalal, A. (2021) examined the opportunities and challenges of digital transformation in India. The authors explore the various components of digital transformation, including e-commerce, digital payments, and digital infrastructure, and discussed the potential benefits and challenges of each component. They also reviewed several studies that have investigated the impact of digital transformation on economic growth and social inclusion in India, and provide recommendations for policymakers to ensure the success of digital transformation initiatives in promoting inclusive growth.

Objectives

The objective of the study is to explore the impact of government policies and digital economy on economic inclusion in Delhi NCR.

Research Methodology

The study is purely based on primary data which were collected from 120 respondents of Delhi NCR through a self-administered questionnaire and by using snowball sampling technique. The collected data were analyzed by using appropriate statistical technique such as SPSS, regression analysis, correlation and Cronbach's alpha was used to determine the validity and reliability of the questionnaire.

Discussion and Results

Table 1 : Reliability of data

Case Processing Summary		
		N
Cases	Valid	120
	Excluded ^a	0
	Total	120
Reliability Statistics		
Cronbach's Alpha		N of Items
0.812		15

From the above table the Cronbach's alpha value is 0.812 which shows digital economy is highly significant and reliable for economic and social inclusion.

Table 2 : Demographic Analysis of Respondent

Variables		Frequency	Percent	Valid Percent	Cumulative Percent
Age(years)	18-24	36	30.0	30.0	30.0
	25-34	24	20.0	20.0	50.0
	35-44	24	20.0	20.0	70.0
	45-54	18	15.0	15.0	85.0
	55 or older	18	15.0	15.0	100.0
Gender	Male	72	60.0	60.0	60.0
	Female	48	40.0	40.0	100.0
Education Level	High School	18	15.0	15.0	15.0
	Associate's Degree	24	20.0	20.0	35.0
	Bachelor's Degree	42	35.0	35.0	70.0
	Master's Degree	24	20.0	20.0	90.0
	Doctoral Degree	12	10.0	10.0	100.0
Monthly Income(Rs)	under 10,000	30	25.0	25.0	25.0
	10,000 to 25,000	24	20.0	20.0	45.0
	25,000 to 50,000	30	25.0	25.0	70.0
	50,000 to 1,00,000	18	15.0	15.0	85.0
	Above 1,00,000	18	15.0	15.0	100.0

The data in Table 2 obtained from a total of 120 respondents, who were resident of Delhi-NCR through demographic questions to learn about their respondents. From these we may integrate that, 30% of the respondents belong to the age group of 18 to 24, 20% of the

respondents were of age 25 to 34, another 20% of the respondents were of age 35 to 44, 15% of the respondents belong to the age group of 45 to 54 and the remaining 15% of the respondents were of age 55 years or older. It was also found out that 60% of the respondents were male at the rest 40% of the respondents were female. To find about the educational background, the respondents were asked about their education level and 15% of the respondents replied that high school is their education level, 20 percent of the respondents responded associated degree, 30% of the respondents responded bachelor degree, another 20% of the respondents had completed their master degree, and the rest and 10% of the respondents were of doctoral degree. The respondents were also asked about their monthly income and in reply to that 25% of the respondents said that their monthly income is below 10,000, 20% offer respondents were of income group from 10,000 to 25,000, another 25% of the respondents had a monthly income of 25,000 to 50,000, 15% of the respondents had an income of 50,000 to `1,00,000 and another 15% respondents had income above `1,00,000 per month.

Table 3 : Factor impacting economic inclusion

Variables		Frequency	Percent	Valid Percent	Cumulative Percent
Government Policies and Initiatives	Not at all important	18	15.0	15.0	15.0
	Slightly important	24	20.0	20.0	35.0
	Moderately important	36	30.0	30.0	65.0
	Very important	18	15.0	15.0	80.0
	Extremely important	24	20.0	20.0	100.0
Digital Inclusion	Very dissatisfied	12	10.0	10.0	10.0
	Somewhat dissatisfied	18	15.0	15.0	25.0
	Neutral	24	20.0	20.0	45.0
	Somewhat satisfied	36	30.0	30.0	75.0
	Very satisfied	30	25.0	25.0	100.0
Digital Economy	Not at all	12	10.0	10.0	10.0
	Slightly	24	20.0	20.0	30.0
	Moderately	36	30.0	30.0	60.0
	Very	30	25.0	25.0	85.0
	Completely	18	15.0	15.0	100.0

The above data of 120 respondents reveals that 15% of the respondents said that government policies and initiatives are not at all important, 20% of the respondents said that government

policy and initiatives are slightly important, another 30% of the respondents said that it is moderately important, 15% of the respondents said that it is very important and the rest 20% of the respondents said that government policies and initiatives are extremely important. The government policies were found to be having a positive impact on the adoption and the expansion of the digital economy as is evident from the result of the study. When asked about the Digital Inclusion around 10% of the respondents were very dissatisfied, 15% were somewhat dissatisfied, where 20% of the respondents remain neutral, 30% of the respondents were somewhat satisfied and the rest 25% of the respondents were very much satisfied. The study explored a financial inclusion through the use of digital economy as the most of the respondents favored the statement and on the other hand some respondent expressed the contrary view. In the case of Digital economy, 10% of the respondents responded not at all, 20% of the respondents said slightly, 30% of the respondents said Moderately, 25% of the respondents responded very, and the rest 15% responded completely to the asked question. It is clear from the results of the study that the majority of the respondents feel satisfied with the functioning of the digital economy in the country as against a very thin opposition who opined otherwise. It is established through the results of the study that government policies ,digital inclusion , digital economy are highly significant for economic and social inclusion as has also been examined by earlier studies i.e Kumar & Singh, Srivastava & Shrivastava, Chaturvedi & Singh, Dutta, Garg & Sharma etc.

Table 4 : T-Test Statistics

One-Sample Statistics			t	df	Sig. (2-tailed)
	Mean	Std. Deviation			
Government Policies and Initiatives	3.0500	1.32747	25.169	119	0.000
Digital Economy	2.8500	1.28108	24.370	119	0.000
Digital Inclusion	3.4500	1.28893	29.321	119	0.000

The analytical Table 4 shows the results obtained after the application of T-test on the selected variables. The Government policies and initiative has a value of T = 25.169 and the Digital Economy has the T value of 24.370 and the third variable that is Digital Inclusion had a T value of 29.321. The significance in each case is less than the threshold limit of 0.05 which means that the result obtained are reliable i.e. they all are important for social and economic inclusion.

Table 5 : Correlation Statistics

Correlations		
Variables		Digital Economy
Digital Inclusion	Pearson Correlation	.988**
	Sig. (2-tailed)	0.000
	N	120

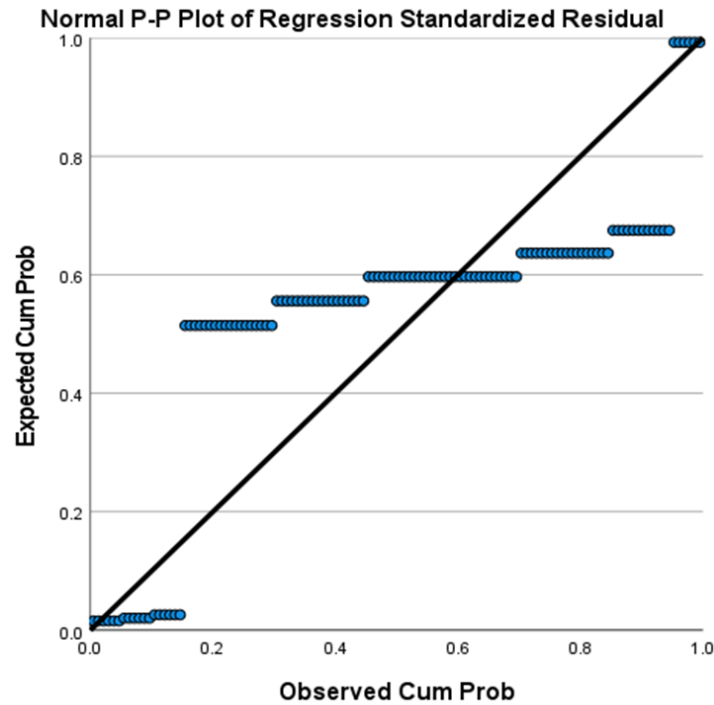
Table 5 shows the results of correlation between the two variables (Digital Economy and economic Inclusion). The results obtained showed a value of 0.988 which is high degree of correlation between the both. The Significant value obtained is less than the threshold value of 0.05 which means that the results obtained are reliable. A high degree of positive is found between digital economy and digital inclusion.

Table 6 : Regression Statistics

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Regression Analysis	.945 ^a	0.893	0.892	0.43613

Anova						
Model		Sum of Squares	df	Mean Square	F	Sig.
Regression Analysis	Regression	187.255	1	187.255	984.463	.000 ^b
	Residual	22.445	118	0.190		
	Total	209.700	119			

Figure 1: Observed cumulative probability



The positive R value shows that there is a positive relation of Government Policies on economic and social inclusion the value obtained is 0.945 which shows that the impact size is big. The Government Policies and Initiatives had a great impact on Digital Economy and Inclusion.

The above-mentioned Regression Analysis table shows the Impact of Government Policies on Digital Economy and Digital Inclusion. The Regression analysis has a F value of 984.463 which signifies that there is a great impact of the Government Policies and Initiatives on the Digital Economy and Digital Inclusion. The significance value is less than 0.05 which states that the results obtained can be relied upon.

Conclusion

The discussion made on the basis of the responses of the respondents from Delhi-NCR. Through the paper, established that the initiatives taken by the government in the form of policies to promote digitalization has a positive impact on spreading economic inclusion in the country. The digital economy, created through the efforts of the government and its agencies with the help of various implementing agencies and stake holders, has a strong bearing on the expansion of the concept of the economic inclusion. A strong commonality emerged out through the results of the study in this regard irrespective of the demographic

features of the respondents. The digitalization of the economy can ensure judicious use and equitable distribution of the limited resources of the country in the welfare of its people and consequently include them in the main stream of the nation. More efforts are needed to be made in the direction to popularize the program through various means; it should be made easier and people friendly; the bottle necks in the form of frauds are to be checked; and extensive training program be initiated to spread the digital literacy rate which in turn may generate ample job opportunities for the young people of the India particularly belonging to the rural areas. The dream of attaining a target five trillion USD economy status for India can be made true only by ensuring the productive participation of its people with help of strong technical knowhow which will let the nation towards more production of quality goods and services. In this way not only local needs of the people will be satisfied but surplus may be used as exports to earn more and more foreign exchangers for the consolidation of the economy.

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A Cross-Continental Study on Health Behavior and its Interplay with Self-Reported Academic Success in University Attendees

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Abstract

The study aimed to explore the connections between health factors and academic achievement among university students across 26 countries with emerging economies. Utilizing anonymous surveys, data were gathered from 20,222 students (41.5% male, 58.5% female), averaging 20.8 years of age, representing Africa, Asia, and the Americas. Academic performance was categorized as excellent/very good (28.4%), good/satisfactory (65.5%), and not satisfactory (6.2%). Multivariate linear regression unveiled links between socio-demographics (younger age, ancestors, high intrinsic religiosity, absence of social support), health behaviors (fiber consumption, fat and cholesterol avoidance, activity, no drugs, no drinking), improved mental health (absence of severe sleep issues, moderate/severe depression), and self-reported academic success. Notably, distinct clusters of health behaviors were identified, bearing relevance for potential public health strategies.

Keywords: Academic Achievement, Cross-National Study, Health Behavior, University Students, Correlation

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Introduction

Health behavior, encompassing a spectrum of actions and choices that individuals make in relation to their well-being, is a critical determinant of overall health and quality of life. Health behavior includes a wide range of actions, from diet and exercise to sleep patterns, stress management, and preventive measures like vaccinations. These behaviors are interconnected and play a pivotal role in shaping an individual's mental, and emotional well-being. Health behaviors are not isolated events; rather, they form habits and routines that contribute to an individual's long-term health trajectory. Numerous factors influence health behavior, ranging from personal determinants to environmental and societal influences. Personal factors include knowledge, attitudes, beliefs, and self-efficacy. The social environment, including family, friends, and cultural norms, can either support or hinder healthy choices. Socioeconomic factors, accessibility to healthcare, and living conditions also play a pivotal role in determining health behavior patterns. (Bretz, 1989) considered that elevated academic attainment among university students (Deliens et al., 2013) assumes paramount significance for fostering enhanced career trajectories. Academic performance stands as a quintessential gauge of a student's educational journey and achievement. Academic performance serves as a critical measure of a student's grasp of knowledge, skills, and concepts across various subjects. It reflects their diligence, dedication, and capacity for learning. Academic success not only shapes an individual's educational trajectory but also lays the foundation for future professional and personal pursuits. Academic performance is influenced by an array of factors, both internal and external. Internal factors encompass a student's aptitude, motivation, study habits, and time management skills. External factors include the quality of education, teaching methodologies, peer interactions, family support, and socio-economic background. Additionally, mental, and physical well-being, as well as access to educational resources, can significantly impact academic performance. A growth mindset, where challenges are seen as opportunities for growth rather than obstacles, can enhance a student's resilience and willingness to tackle difficult subjects. Intrinsic motivation, fueled by a genuine interest in learning, can lead to a deeper understanding of concepts and sustained effort in studies. Academic performance is intricately linked to holistic well-being. Physical health, mental wellness, and emotional resilience all contribute to a student's ability to excel academically. Encouraging a balanced lifestyle, promoting stress management techniques, and fostering a culture of open communication can create an environment conducive to both personal growth and academic achievement. A constellation of distinctive socio-demographic determinants has surfaced in tandem with academic accomplishment. These encompass factors such as female gender (Ansari & Stock, 2010; Vaez & Laflamme, 2008), advanced age, elevated socio-economic standing, and active religious participation (Trochel et al., 2000; Sirin, 2005), and the presence

of robust social support structures (Walker & Dixon, 2002; Malecki & Demaray, 2006). Furthermore, an intricate interplay between specific health behaviors and academic performance has been discerned. These encompass commendable dietary practices (Cogollo & Gómez-Bustamante, 2013), optimal dietary quality (Florence, et al., 2008), judicious eatables consumption, abstention from dieting regimens (Wald et al., 2014), engagement in moderate-to-vigorous physical activity (Wald et al., 2014), judicious alcohol consumption or abstention (Aertgeerts & Buntinx, 2002), avoidance of tobacco, a lack of involvement in substance use, absence of aggressive behavior (Deliens et al., 2013), optimal sleep duration, and favorable sleep quality (Gomes et al., 2011). Moreover, prudent nocturnal habits, including early bedtimes and awakenings, have been implicated in this intricate web (Trockel et al., 2000; Eliasson et al., 2010), alongside a reduction in risky sexual behaviors, exemplified by consistent condom usage (Mehra, et al., 2014).

Literature Review

(Busch et al., 2017) delved into the intricate web of high school students' health behaviors and their profound interplay with academic performance, further dissecting the role of psychosocial challenges. The study encompassed 905 Dutch high school students, engaging them through an online survey. This comprehensive inquiry encompassed multifaceted health behaviors - encompassing smoking, bullying experiences (both as victim and perpetrator), excessive internet engagement, and physical activity. It also probed into the realm of psychosocial well-being, encapsulating dimensions of depression, anxiety, and stress. The nucleus of the investigation was the students' academic prowess, as reflected in their overall grade average across core subjects. This critical academic metric, culled from official school records, became a touchstone to measure the impact of these diverse health behaviors. The data underwent meticulous scrutiny through mixed-effects regression models, enabling nuanced analysis. The findings resonated with notable clarity. The study uncovered a direct association between specific health behaviors and compromised academic performance. Smoking, being subjected to bullying, succumbing to compulsive and excessive internet usage, and inadequate physical activity each cast a shadow on students' scholastic achievements. Yet, the study ventured further, unraveling an intricate group of causality. The intricate mediation of psychosocial predicaments emerged as a pivotal intermediary. Instances of being bullied, perpetrating bullying, smoking, and overindulgence in internet activities exhibited an indirect connection with academic grades - a connection fostered through the lens of psychosocial adversity. This unveils a layered relationship where compromised academic attainment dovetails with these health behaviors, interlaced via the conduit of psychosocial tribulations. This study thereby underscores the intricate synergy of health behaviors, psychosocial dynamics, and academic accomplishment, portraying a

comprehensive tableau of students' well-being and scholastic triumph. (Bradley & Greene, 2013) conducting a comprehensive systematic literature review spanning from 1985 to 2010, this study synthesized compelling evidence regarding the intricate connection between health-risk behaviors during adolescence and academic achievement. Summarizing the study's findings from 122 peer-reviewed articles, the research highlighted a clear and meaningful link between risky health behaviors and academic success. These behaviors include things like violence, smoking, drinking, drug use, risky sexual activities, lack of exercise, and unhealthy eating habits. The results underscore the idea that tackling both health behaviors and academic performance together can lead to positive outcomes throughout life in the United States, with benefits that feed into each other. (Farokhzadian et al., 2018) conducted a study to scrutinize the extent of health-promoting behaviors and their intricate interplay with both their self-efficacy for health practices and academic accomplishments. Carried out on 217 nursing students from a prominent medical sciences university in southern Iran, this descriptive and correlational research harnessed the Persian version of the HPLP II, the SRAHPS, and the student's GPA to glean insights. The outcomes unveiled a moderate level of health-promoting behaviors (2.48 ± 0.35) and self-efficacy for health practices (2.55 ± 0.62) among the students. Notably, the mean academic achievement was established at a B level (16.02 ± 1.85). Intriguingly, a substantial correlation emerged between health-promoting behaviors and both self-efficacy for health practices, and academic accomplishment. Equally captivating, a significant correlation was observed between self-efficacy for health practices and academic achievement. (Groton, 2019) undertook a study to explore the intricate interrelations existing among mental well-being, academic self-assurance, and scholastic advancement in the realm of college students. Employing data derived from the Norwegian Students' Health and Welfare Survey 2014 (SHOT 2014), this study delved into the multifaceted dimensions of mental health, academic self-efficacy, and psychosocial determinants within the student populace. Strikingly, the findings unveiled a notable 17% prevalence of profound psychological distress among the student cohort. Noteworthy patterns emerged, revealing that those grappling with severe mental distress exhibited a fourfold increase in the likelihood of reporting diminished academic self-efficacy, coupled with a twofold rise in the likelihood of encountering setbacks in their academic journey, juxtaposed with their counterparts experiencing milder or moderate mental distress symptoms. Notably, 27% of those encountering pronounced mental distress had actively sought the aid of professional assistance, while an additional 31% had contemplated embarking on a similar path.

(Zadworna, 2020) done a comparative analysis to scrutinize distinctive dimensions of optimal aging within two distinct cohorts: one constituted by U3A members engaged in lifelong learning and the other by elderly individuals devoid of such educational pursuits. This study

not only discerned discernible variations between the two groups across various facets of health behavior but also unearthed significant associations among the examined variables and the determinants influencing health-related conduct. Remarkably, U3A participants exhibited markedly elevated scores in overall health behavior and specific constituents thereof, coupled with an augmented perception of self-rated health in contrast to their counterparts disengaged from any form of lifelong learning. Intriguingly, the nexus between self-rated health, health responsibility, life satisfaction, and general health behavior showcased positive correlations, albeit with distinct magnitudes, between the two groups. In a notable advancement, a hierarchical regression model unraveled the predictive prowess of U3A attendance, alongside sociodemographic and subjective factors, in shaping the landscape of health behavior engagement. The study's import resonates in the revelation that self-rated health, health responsibility, and life satisfaction stand as pivotal prognosticators of health behavior patterns among the elderly populace, thus illuminating a path toward fostering holistic well-being in later stages of life.

In light of these multifaceted dynamics, the present inquiry sought to illuminate the interrelation between health metrics and academic attainment within a diverse assemblage of university students originating from 26 economies with nascent to moderate development statuses.

Methodology

Conducted as a cross-sectional investigation, this study was collaboratively undertaken across a network of participating nations, with due credit accorded to these contributors (refer to Acknowledgments). The survey instrument, an anonymous and self-administered questionnaire, underwent an iterative development process in English before being meticulously translated and back-translated into languages indigenous to the participating countries. Envisioned and propelled through the personal academic networks of the principal investigators, this endeavor encompassed the engagement of trained research assistants for data collection. In the year 2013, these proficient assistants facilitated the survey's administration to a targeted cohort of undergraduate university students, specifically those aged 16 to 30 years. This endeavor was undertaken in one or two universities located in the capital cities or prominent urban centers of the respective participating countries. Pertinently, a diversity of academic disciplines, including education, social sciences, business and law, science, agriculture, health and welfare, were encompassed within the ambit of this study. The process of participant recruitment involved the solicitation of undergraduate classes, strategically selected through stratified random sampling, based on the universities' timetable scheduling. The survey was administered upon completion of a teaching session. Notably, the participating student cohort hailed from various academic years, contributing

to the richness and breadth of the collected data. Conscientious ethical considerations were upheld, with informed consent garnered from participating students, and the study conducted with due diligence in the year 2013. Impressively, participation rates exceeded 90% in the majority of the countries encompassed within this investigation. As a testament to ethical rigor, institutional review boards accorded their approvals across the spectrum of participating institutions. The geographical expanse of the study was remarkable, with a diverse array of countries contributing to the data corpus. The roster of nations encompassed within this investigation comprises "Bangladesh (n=800), Barbados (n=580), Cameroon (n=627), China (1184), Colombia (n=816), Egypt (n=831), Grenada (n=435), India (800), Indonesia (n=750), Ivory Coast (n=824), Jamaica (n=762), Kyrgyzstan (n=837), Laos (n=806), Madagascar (n=800), Mauritius (n=501), Namibia (n=503), Nigeria (n=820), Pakistan (n=813), Philippines (n=968), Russia (n=799), Singapore (n=894), South Africa (n=888), Thailand (n=860), Tunisia (n=960), Turkey (n=800), and Venezuela (n=564)".

Assessment of Academic Performance: The evaluation of academic achievement entailed a single question soliciting participants to self-rate their academic performance. Responses were measured on a five-point scale, where 1 denoted "excellent" and 5 indicated "not satisfactory."

Socio-Demographic Inquiry: Age, gender, and socioeconomic background were encompassed within the socio-demographic assessment. Participants rated their family's financial status as falling within distinct brackets: affluent (within the top 25% of the respective country's wealth distribution), reasonably well off (occupying the 50% to 75% percentile range), not very affluent (within the 25% to 50% range), or relatively disadvantaged (in the lowest 25% of the country's wealth distribution) (Wardle & Steptoe, 1991). The subsequent categorization clustered individuals into either "poorer" (encompassing not very well off and quite poor) or "wealthier" (comprising wealthy and quite well off) designations.

Perceived Social Support: The assessment of social support drew upon three items sourced from the Social Support Questionnaire, aimed at gauging the perception of tangible and emotional support (Brock, Sarason, Sarason & Pierce, 1996). Respondents provided input on a four-point scale, ranging from 1 (completely true) to 4 (completely false). These item responses were aggregated, resulting in a composite score within the 3 to 12 range. Notably, the reliability of this measure was robust, as evidenced by a Cronbach's alpha coefficient of 0.95 for the present sample.

Religious Disposition: The assessment of religious inclination hinged on the intrinsic (or subjective) religiosity sub-scale, comprised of three items, drawn from the Duke University Religion Index (DUREL; Koenig, Parkerson & Meador, 1997). The sub-scale demonstrated

high internal consistency, as indicated by a Cronbach's alpha coefficient of 0.96 for the present sample.

Assessment of Fruit and Vegetable Consumption: The quantification of fruit and vegetable intake relied on dual inquiries: "How many servings of fruit do you typically consume in a day?" and "How many servings of vegetables do you typically consume in a day?" These queries drew upon 24-hour dietary recall data as the reference standard (Hall, Moore, Harper & Lynch, 2009). A robust measure of internal consistency was evidenced by a Cronbach alpha coefficient of 0.74 for this composite fruit and vegetable assessment. Subsequently, the criterion for adequate fruit and vegetable consumption was established as the consumption of fewer than five servings of fruits and/or vegetables per day, aligning with prior work (Hall et al., 2009).

Supplementary Dietary Parameters: Additional dietary facets encompassed: (a) endeavors to avoid consumption of fat and cholesterol-containing foods (categorized as yes or no); (b) intentional incorporation of high-fiber foods into the diet (dichotomized as yes or no); and (c) the frequency of breakfast consumption, drawing upon established methodology (Wardle & Steptoe, 1991).

Physical Activity Assessment: The evaluation of physical activity engaged the self-administered International Physical Activity Questionnaire short version, capturing activity patterns over the preceding week. Rigorous attention was accorded to the guidelines delineated in the IPAQ manual to ensure both reliability and validity, with the particulars expounded elsewhere (Craig et al., 2003). Physical activity levels, as classified by the official IPAQ scoring protocol (International Physical Activity Questionnaire, 2014), were categorized into tiers of low, moderate, and high engagement.

Tobacco Consumption Evaluation: The inquiry into tobacco utilization encompassed the question: "Are you presently using any of the following tobacco products (such as cigarettes, snuff, chewing tobacco, cigars, etc.)?" Participants were presented with binary response options, namely "yes" or "no," in line with the World Health Organization's framework (WHO, 1998).

Assessment of Binge Drinking: Binge drinking tendencies were appraised through a solitary item, querying the frequency of engaging in the consumption of five or more drinks (for men) or four or more drinks (for women) on a single occasion. The response continuum ranged from 1 denoting "never" to 5 representing "daily or almost daily," aligning with the approach advanced by Babor et al. (2001).

Illicit Substance Usage Appraisal: The investigation of illicit drug use involved the query: "How frequently, over the past 12 months, have you consumed drugs not prescribed by a healthcare provider?"

Incidents of Physical Altercation: The pivotal outcome centered on instances of physical altercations, as individuals were prompted: "In the preceding year, how many occasions were you involved in a physical confrontation?" Respondents were afforded a spectrum of response choices, spanning from "0 times" to "12 or more times," as stipulated by the Centers for Disease Control and Prevention (CDC, 2013).

Seat Belt Adherence Assessment: Adherence to seat belt usage was evaluated through the question: "While driving or riding in the front seat of a vehicle, do you consistently wear a seat belt?" Response options encompassed "All the time," "Some of the time," "Never," or the alternative of "I don't ride in cars," in correspondence with established methodology (Wardle & Steptoe, 1991).

Drinking and Driving Behavior: Participants' inclinations towards drinking and driving were scrutinized via the question: "In the past year, how frequently did you operate a car or motorcycle when you perceived yourself to be possibly under the influence?" The response repertoire encompassed "never" or quantification of the frequency.

Evaluation of Sexual Risk Behavior: The examination of sexual risk behavior hinged on the assessment of condom use consistency within the preceding three months.

Sleep duration data were collected by querying participants about their average hours of sleep within a 24-hour period. This inquiry led to the classification of responses into three distinct categories: "short sleep" denoting 6 hours, a "reference category" encompassing 7-8 hours, and "long sleep" encapsulating 9 hours. Sleep-related issues were evaluated by soliciting participants' experiences with sleep disturbances over the past 30 days, encompassing difficulties such as falling asleep, frequent nocturnal awakenings, or early morning awakenings. Responses spanned a spectrum from 1 (absent) to 5 (severe/unable to manage). Notably, sleep problems were ascertained when respondents indicated a severity level of "severe" or "extreme/cannot do." Depressive symptoms were assessed using the CES-D with a 10-item version. Scoring on this scale ranged from 0 to 9, indicating mild depressive symptoms, 10 to 14 signifying moderate depressive symptoms, and a score of 15 or above indicative of severe depressive symptoms. The reliability coefficient, as measured by Cronbach's Alpha's, for this 10-item scale was determined to be 0.78 within the scope of this study. For the evaluation of PTSD symptoms in the preceding month, Breslau's 7-item screener was employed. Respondents were queried regarding difficulties stemming from traumatic experiences, assessing aspects like emotional isolation and detachment from others. The internal consistency of this 7-item scale, gauged through Cronbach's alpha reliability coefficient, was recorded as 0.75 within the context of this study.

Data Analysis and Interpretation

The data analysis phase of the study was conducted utilizing STATA software, specifically version 11.0, developed by Stata Corporation located in College Station, Texas, USA. Methodologically, the study employed a multifaceted approach to data interpretation and presentation. To elucidate the distribution of academic performance proportions, descriptive statistics were employed. Additionally, to discern potential gender disparities within academic performance proportions, the Pearson Chi-square test was administered. The intricate relationships between a myriad of factors encompassing sociodemographic variables, health behaviors, sleep patterns, and mental health indicators, and their interplay with academic performance were examined through the application of linear regression techniques. This methodological choice allowed for the assessment of associations, elucidating potential causal or correlative linkages between these multifarious variables and academic achievement. Importantly, to ensure the robustness of the findings, the potential influence of multicollinearity—a phenomenon in which predictor variables are highly correlated—was thoroughly scrutinized. This was accomplished through the assessment of the Variance Inflation Factor (VIF) and tolerance values for each regression model. The rigorous evaluation of these statistical indices established that multicollinearity did not pose a significant concern within any of the multivariate analyses, thereby enhancing the reliability and validity of the study's results. Furthermore, acknowledging the intricate nature of the study's design, which incorporated clustering as an essential component, the influence of country-specific variations was accounted for. To this end, the regression models included country as a clustering variable, effectively addressing potential confounding effects emanating from differing contextual nuances across various geographical locations.

Sample

The study encompassed a diverse and substantial sample, comprising 20,222 university students drawn from a global scope, representing an amalgamation of 26 distinct countries spanning the continents of Africa, Asia, and the Americas. Within this comprehensive cohort, gender distribution exhibited a balanced dichotomy, with 41.5% constituting males and 58.5% females. The mean age of the participants stood at 20.8 years, accompanied by a standard deviation of 2.8, reflecting a representative age range that contributes to the study's demographic heterogeneity. The academic performance spectrum of the participants was multifaceted, revealing nuanced insights into their scholastic achievements. Specifically, 28.4% of the student body reported commendable levels of academic performance characterized as "excellent" or "very good." Furthermore, the majority, comprising 65.5%, denoted their academic performance as "good" or "satisfactory," signifying a notable prevalence of moderate achievement. Conversely, a minority subset, accounting for 6.2%,

articulated their academic performance as "not satisfactory," delineating a segment where improvement might be warranted. Detailed quantitative breakdowns of the academic performance categories in conjunction with sociodemographic attributes, health behaviors, and variables encompassing sleep patterns and mental well-being are expounded in Table 1, delineating an intricate web of associations within the complex interplay of factors influencing the educational journey of these university students.

Table 1 : Sample characteristics and academic performance

Variables	Academic performance			χ^2 P-value
	Excellent or very good	Good or satisfactory	Not satisfactory	
Sociodemographics				
<i>All</i>				
<i>Age in years</i>				
16-19	28.4	65.5	6.2	<0.001
20-21	38.7	32.3	32.8	
22-30	34.8	36.0	35.8	
	26.5	31.7	31.4	
<i>Gender</i>				
Female	59.2	59.0	49.1	<0.001
<i>Family economic background</i>				
Quite poor/not very well off	37.6	49.0	56.1	<0.001
Wealthy/quite well-off	62.4	51.0	43.9	
Social support (high)	46.8	40.8	35.2	<0.001
<i>Intrinsic religiosity</i>				
Low	28.3	34.9	42.3	<0.001
Medium	38.1	35.1	30.4	
High	33.6	30.0	27.3	
Health behaviour				
Fruit and vegetables (5 or more servings/day)	19.4	19.1	17.7	0.461
Trying to eat fibre	43.2	38.4	36.7	<0.001
Avoiding fat and cholesterol	40.3	38.6	37.1	0.041
Skip breakfast	44.4	46.6	49.7	<0.001
Physical activity (high)	33.3	31.3	28.5	<0.001
Current tobacco use	12.1	13.0	16.2	<0.001
Binge drinking (at least once/month)	12.1	12.0	12.8	0.673
Illicit drug use (past year)	15.5	19.9	25.3	<0.001
Physical fighting (past year)	13.2	13.0	13.6	<0.001
Always using seatbelt	49.2	44.3	40.5	<0.001
Drinking and driving (past year)	25.2	26.9	38.8	<0.001
Consistent condom use	21.8	23.0	20.8	0.200
Sleep and mental health				
<i>Sleep duration</i>				
7-8 hours	47.5	46.3	43.6	0.122
6 or less	39.0	39.4	41.6	
9 or more	13.4	14.3	14.8	
Sleep problem	9.6	10.2	15.5	<0.001
Depression symptoms (moderate to severe)	31.2	38.4	55.7	<0.001
PTSD symptoms	20.2	20.4	30.4	<0.001

The multivariate linear regression analysis undertaken in this study revealed a nexus of intricate relationships between an array of influential determinants and the self-reported

academic performance of university students. This comprehensive exploration encompassed a spectrum of factors spanning sociodemographic attributes, health behaviors, and dimensions of mental well-being, each contributing to the intricate tapestry that shapes scholastic attainment. Within the realm of sociodemographic variables, a confluence of distinctive factors emerged as statistically significant predictors of self-reported academic performance. Youthfulness, denoting a younger age demographic, surfaced as a noteworthy correlate, aligning with heightened academic achievements. Furthermore, a family background characterized by relative affluence exhibited a discernible association, implicating a potential link between economic resources and scholastic success. Paradoxically, the absence of robust social support mechanisms and the manifestation of high intrinsic religiosity, indicative of a deep-seated spiritual orientation, were linked to academic performance. Navigating the sphere of health behaviors, a mosaic of habits converged to exert discernible influences on academic performance outcomes. The adoption of dietary choices marked by an inclination towards fiber consumption and conscious avoidance of fat and cholesterol emerged as pertinent factors coinciding with favorable academic outcomes. The embracement of a physically active lifestyle, denoted by elevated levels of physical activity, was notably tied to enhanced academic performance. Furthermore, engaging in illicit drug usage and participating in activities involving alcohol and driving displayed an adverse association with scholastic attainment. Elevating the discourse to encompass the realm of mental well-being, an intriguing dynamic unfolded. The absence of severe sleep problems and the mitigation of moderate to severe depressive symptoms surfaced as crucial determinants harmonizing with favorable academic performance. This interplay underscores the intricate intertwinement between mental equilibrium and academic accomplishments, suggesting a symbiotic relationship between psychological well-being and scholastic excellence. These intricate interconnections, unveiled through rigorous multivariate linear regression modeling, underscore the intricate confluence of sociodemographic attributes, health behaviors, and mental well-being as pivotal contributors to the self-reported academic performance of the examined university students, as elucidated in Table 2.

Table 2 : Linear regression analysis for association between independent variables and self-reported academic performance

Variables (%)	Univariate		Multivariate	
	t	β	t	β
Sociodemographics				
<i>Age in years</i>				
16-19	Ref.		Ref.	
20-21	-5.10***	-0.043	-5.66***	-0.073
22-30	-9.21***	-0.077	-3.34***	-0.044
<i>Gender</i>				
Male (base=Female)	-3.42***	-0.024	-0.64	-0.008
<i>Family economic background</i>				
Quite poor/not very well off	Ref.		Ref.	
Wealthy/quite well-off	22.26***	0.158	12.80***	0.152
Social support (high) (base=low)	-10.17***	-0.079	-5.87***	-0.067
<i>Intrinsic religiosity</i>				
Low	Ref.		Ref.	
Medium	10.63***	0.087	5.90***	0.078
High	12.82***	0.105	6.33***	0.085
Health behaviour				
Fruit and vegetables (5 or more servings/day)	1.71	0.013	0.16	0.002
Trying to eat fibre	5.46***	0.040	3.27***	0.040
Avoiding fat and cholesterol	3.56***	0.026	2.14*	0.026
Skip breakfast	-5.29***	-0.038	-1.63	-0.019
Physical activity: High (base=low or medium)	5.63***	0.040	3.60***	0.041
Current tobacco use (base=none)	-2.01*	-0.015	-1.57	-0.019
Binge drinking (at least once/month)	0.26	0.002	---	
Illicit drug use (past year)	-10.43***	-0.081	-2.85**	-0.033
Physical fighting	1.30	0.010	---	
Always using seatbelt	6.99***	0.054	1.41	0.017
Drinking and driving	-7.65***	-0.065	-5.71***	-0.069
Consistent condom use	-1.27	-0.012	---	
Sleep and mental health				
<i>Sleep duration</i>				
7-8 hours	Ref.		Ref.	
6 or less	-1.59	-0.012	-1.77	-0.021
9 or more	-2.41*	-0.019	-0.21	-0.002
Sleep problem	-5.51***	-0.040	-3.99***	-0.046
Depression symptoms (moderate to severe)	-14.45***	-0.103	-4.72***	-0.056
PTSD symptoms	-5.26***	-0.039	-2.02*	-0.024

***P<.000, **P<.01, *P<.05

Results and Discussion

The primary objective of this investigation was to delve into the differentials encapsulated within socio-demographics, health behavior, sleep patterns, and mental well-being, and their interplay with self-reported academic prowess within an expansive cohort of university students spanning 26 nations. The outcomes gleaned from this empirical endeavor, echoing antecedent scholarly inquiries (Malecki & Demaray, 2006; Sirin, 2005), have brought to the fore a panorama of salient insights into the intricate dynamics shaping academic

performance. In consonance with precedent research, the current study has unearthed a salient nexus between sociodemographic factors and academic accomplishment. Noteworthy among these factors is the economic backdrop from which students hail, with those emanating from more affluent family strata being endowed with an academic edge. However, an intriguing counterpoint emerges wherein students hailing from economically challenged backgrounds appear to grapple with adversities potentially encumbering their academic trajectory (Ansari & Stock, 2010). This underscores the imperative to address financial exigencies through innovative interventions such as scholarships and financial support programs, thereby mitigating the detrimental impact of economic disparities on academic outcomes. In tandem, a compelling association was unveiled between robust social support networks and academic achievement, affirming the potency of interpersonal reinforcement in fortifying scholastic pursuits (Richard et al., 2012). Additionally, the intricate interplay of dietary habits with academic attainment came into focus, as the adoption of healthful dietary behavior, exemplified by a penchant for fiber consumption while sidestepping fat and cholesterol, emerged as indicators of enhanced academic performance (Bradley & Greene, 2013; Florence et al., 2008). Paradoxically, the intricate rapport between adequate sleep duration and academic accomplishment, though not definitive, accentuates the intriguing confluence between sleep patterns and academic engagement (Trockel et al., 2007; Gajre et al., 2008). Analogously, the ramifications of substance use emerged as a noteworthy dimension, with illicit drug use and engagement in risky behaviors like drinking and driving cast as potential deterrents to academic excellence (Bradley & Greene, 2013). Furthermore, the intricate dance between mental well-being and academic performance emerged, unveiling a dynamic interplay wherein depressive symptoms and sleep disturbances manifested a correlation with academic underperformance (Gomes et al., 2011). While unveiling these intricate relationships, it is paramount to acknowledge the multifaceted nature of causality, which the cross-sectional design of this study precludes from definitively deciphering. Nevertheless, the observations culled from this exploration underscore the pivotal role of university health programs in identifying and ameliorating depressive symptoms and sleep disturbances, thereby bolstering academic acumen in the vibrant landscape of tertiary education.

Conclusion

In an expansive investigation encompassing a considerable cohort of university students from 26 countries representative of low, middle-income, and emerging economies across diverse continents including Asia, Africa, and the Americas, the study at hand has unveiled a noteworthy prevalence of academic performance categorized as not satisfactory. Within this intricate tapestry, a group of health risk factors, spanning the domains of dietary habits,

physical inactivity, substance utilization, sleep disturbances, and manifestations of depressive symptoms, has been discerned. These discerned facets, emblematic of a multifaceted matrix of health behaviors and mental well-being indicators, emerge as pivotal focal points for strategic interventions aimed at harnessing and elevating the scholastic accomplishments of university students. In essence, this empirical endeavor delineates a canvas of potential interventional avenues that, by targeting and ameliorating the identified health risk factors, may serve as potent instruments for bolstering academic performance within the dynamic milieu of tertiary education. These implications cast a compelling narrative for the orchestration of comprehensive strategies that not only augment cognitive pursuits but also foster holistic well-being among the diverse tapestry of university students spanning the contours of disparate socioeconomic landscapes.

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