# RESEARCH FRONTS

A Peer Reviewed Journal of Multiple Sciences, Arts & Commerce

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> "A University stands for humanism, for tolerance, for reason, for the adventure of ideas and for the search of truth. It stands for the onward march of the human race towards ever higher objectives. If the Universities discharge their duties adequately, then it is well with the Nation and the People,"
>
> — *Jawaharlal Nehru*

## IDEAL UNIVERSITY

**"This is a campus in a democracy.**

**Let the buildings speak to the students.**

**Let it become their canvas".**

- **G. Parthasarthi (1971)**

  The First Visionary Vice - Chancellor of

  Jawaharlal Nehru University, New Delhi.

### *From the Desk of Chief Editor*

*I am extremely delighted and feel a sense of satisfaction by putting the Seventh volume of Research Fronts, in front of its readers that signifies a turning point in its uninterrupted journey. I am well aware of the „underworld" of New Imperialism that has created an ambience of mythological hysteria throughout the world and now propagates the philosophy of dystopia. In this era of post-truth mythological dreams, comprising nostalgia, utopia and propaganda rolled into one, seem to paralyse the entire scientific achievements of mankind. In response to this unprecedented challenge, one would like to emphasize that Indian society and culture is too deep rooted to withstand these shockwaves created by the vested interests. Taking clue from an apt comment that,* ***"The Geography of Indian***

***civilization is symbolic rather than representative: it is rule based, rather than imitative"*** *(Jai Pal Singh and Mumtaz Khan, 1999), one is fully convinced that symbols are deeply entrenched in the ethos of Indian culture and society. The mystique of cosmic number seven occupies a place of pride among these symbols. In this context, seventh volume of our journal acquires a special significance. Research papers in this volume are deeply immersed in scientific rigour, employing appropriate methods, rooted in local/regional issues, and grounded in philosophies of social welfare.*

*In order to make the journal slightly more logical and cohesive, it has become imperative to restrict the contributions only from the social and biological sciences. Thus deviating from our previous policy we have shed symbolically the unhealthy fat from its body to make it more slim and smart. Consequently, the journal now contains only 11 research papers drawing from the disciplines of Geography (5), Economics (4), Botany (1), and Zoology (1).Moreover, the spatial spread of the contributors includes New Delhi; Alwar and Ajmer (Rajasthan), Banaras (U P), Bhopal and Indore (M P), and Rajnandgaon and Bilaspur (Chhattisgarh).*

*The readers will encounter a marvellous piece of research in Cultural Geography (more specifically Geography of Literature), in the very first paper, entitled "Sites of Cultural Contestation in Yadva's Novels" by Jaipal Singh and Mumtaz Khan. It is followed by a sound conceptual paper on "Globalization and Contemporary Process of Organization of Space" by Hanuman Singh Yadav. On the other hand, Krishna Nandan Prasad highlights the ground reality of "Primary Health Care in a Globalized World" in Chhattisgarh. Monika Kannan in her paper, "Crime against Women in Rajasthan: A Geographical Interpretation" employs the latest technology of GIS. Zakia Akhtar"s paper, entitled "Dargah Hazarat Nizamuddin Auliya: Demographic and Social Background of Pilgrims" reflects in bold colour the role of Dargahin communal harmony and unity of the country.*

In the field of Economics papers are focused on various aspects of agriculture that deal with "Economics of Paddy Crop in Anantnag District, Jammu and Kashmir" by Tajamul Khurshid and Gyan Prakash, "Regional Dimension of Performance of Agriculture in Uttar Pradesh" by Abhishek Prakash and Rakesh Raman, and "Rural- Urban Linkages and Agricultural Productivity in Chhattisgarh" by Sushil Tripathy. Moreover, "Empowerment of Women through Education in Madhya Pradesh", a topic of multidisciplinary interest, has been discussed by Meenu Kumar (an economist).

The last two papers in Zoology and Botany are field based study - "Diversity of Fish Fauna: A Study of Rajnandgaon District" by Sanjay Thiske and "Phytosociological Study of Macrophytes for Identifying Natural Vegetational Composition of Arpa River in Bilaspur City" by Shubha Verma are useful from the perspective of these sciences.

On the basis of this we can generalize that while some of the papers are theoretically informed and/or methodologically sound others are grounded in empirical work. Philosophically, the papers range from Marxist to cultural and methodologically from GIS and quantitative techniques to interpretive.

I sincerely thank all the contributors for sending their papers for publication and revising them well in time. I was also fortunate in getting some of the eminent scholars for conceding to my request to review the papers. I am extremely thankful to our Principal Dr. R. N. Singh for his patronage, inspiration and encouragement in our endeavour, not only to publish the journal but also improve its standard. I also thank my colleagues Dr. Shailendra Singh, Editor and Dr. Sanjay Thiske, Managing Editor for their moral as well as academic support. Thanks are also due to the owner of Shankar Computer & Printers, Rajnandgaon who despite his professional incompetence and casual nature, ultimately succeeded in publishing the journal. However, as Chief Editor of the journal I feel sorry for the unnecessary delay in publication because of him and take full responsibility for any other lapses.

Krishna Nandan Prasad

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# SITES OF CULTURAL CONTESTATION IN YADAV'S NOVELS

## Jaipal Singh* and Mumtaz Khan**

*Chief Editor's Note*

*In India symbols are deeply entrenched in the ethos of its culture and society. The mystique of cosmic number **seven** occupies a place of pride among these symbols. In this context the **seventh** volume of our **Journal** charts a new path by paying homage to a recently departed academic by presenting a research paper that evaluates his achievements in an area other than his field of teaching geography. It was published initially in **Annals of the Rajasthan Geographical Association** (1998-99) and subsequently in the book **Mythical Space, Cosmology, and Landscape** (2002).We are reprinting this paper, by eminent cultural geographers Jai Pal Singh and Mumtaz Khan, for two specific reasons. Firstly, literary geography became a prominent field of research in the Western world with some contributions by Indian expatriates, In India it still remains an utterly neglected field. In this context, this „outstanding" paper is of signal importance as it analyses the fictional world of Mohar Singh Yadav from the perspective of theory-informed new cultural geography. Since literary geography takes into account the novels, stories, poems etc. This paper may act as a catalyst for Indian geographical fraternity in general and our regional culture in particular. Writings of major literary figures like Gajanan Madhav Muktibodh who hailed from our region may be explored from the geographical perspective.*

*Secondly, as far as our knowledge goes, this is the only study in geographic world, wherein literary writings of a professional geographer has been interpreted. Having his degree of M, A. in Geography (Gold Medal) from Udaipur University and Ph.D. from Jamia Millia Islamia, New Delhi, Mohar Singh Yadav taught in Government Colleges at Bikaner and Alwar. Besides his academic responsibility (teaching and research) as a geographer, Yadav carved out a distinct place in Hindi literature as a prolific writer of novels, stories, short stories and children"s literature. A number of his stories were translated into various languages (Assamese, Urdu, Gujarati, Oriya, Tamil and Malayalam) of India. He was awarded **Rangeya Raghav Puraskar** in 1989-90 by **Rajasthan Sahitya Academy, Udaipur** on his novel (**SukhiyāSab Sansār**), and **Kala Samskriti Sahitya Vidyapeeth**, **Mathura** in 1976 honoured him as „**Sahityalankar'** for one of his stories (**Kahar Asadh Ka**).*

*Mohar Singh Yadav expired on June 25, 2017 and we are paying our homage in a slightly different way. Hopefully, this would encourage others to enter and explore this uncharted territory.*

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## Introduction:

This essay deals with the fictional world of Mohar Singh Yadav who is a noted short story writer of Rajasthan. He has written more than a hundred short stories though only two short but significant novels— *Banjar Dhartī* (1979) and *Sukhiyā Sab Sansār (*1991). Both the novels, well received by the critics (Atur, n.d.), are the object of discussion of this study.

We have selected Yadav's novels for our study for two reasons: *(i)* Yadav teaches geography at Government Arts College, Alwar [1] We intend to find out how a professional geographer deals with space and place in his novels, and *(ii)* his novels and many of his short stories are set in a village enmeshed in the socio-cultural milieu of Rāth (Schwartzberg, 1985), a region of our interest. We want to investigate how he expiates human conditions in the socio-cultural milieu of the region and to analyze his novels in the context of contemporary cultural discourses.

Yadav was born on the 29th January, 1948 at Mainpur, a small village located at the foot of outlying Arāvalli hills in Mundāwar tehsil of Alwar district, Rajasthan, where, for obvious reasons, his ancestral home and farmland are located. He has not severed his links with the village. He visits the village occasionally to keep himself abreast of the developments there.

After years of residence at Alwar, Udaipur, Bikaner and Alwar again, Yadav returns to the village to create the Mainpur of his childhood in his numerous short stories and the two novels. He uses Mainpur as a setting for his novels and many of his short stories. The setting of his novels in his early place reveals the importance of roots and childhood images of places in his creative writings. He has in fact recreated settings that he knew and loved.

For Yadav Mainpur is not an anonymous place, Mainpur has a history. It is inscribed on its landscape. For example, Jaisinghmaārā is a place where Jai Singh killed a tiger in days gone by. It has a tradition of honour. Kayamkhanis beat a thief to death to keep the honour of the village. Sukhiyā pays three hundred rupees to a destitute widow to save the honour of Mainpur. Characters in the novels are acquainted with these traditions.

Yadav writes in a pithy, innovative style and ingeniously employs the vehicle of dialogue for the progress of story and characterization of persons and places. He writes in scintillating standard Hindi *(Khari Boli)* but his prose is interspersed with *Rāthi* dialect words and idioms which embellish his language with a tinge of local colour. The dialect words and idioms add legitimacy and strength to his rural settings. They help to create rural ambiance.

## Places in his Novels

Yadav's novels are place-specific but not place-defining (Shortridge, 1991). He does not dwell upon places nevertheless places emerge in his writings as the story progresses from one event to another. Moreover, Yadav is an economical writer. He is not given to writing lengthy description of places or landscape, nor create memorable vignette of places. He uses places

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for symbolic purposes as landmarks. In his writings places are points on a routeless map. He has nodes but no connecting links, vertices without axes.

His novels have small spatial scale. They concentrate on Mainpur and its environs. His characters are intensely rooted in the local landscape. They rarely venture out of Mainpur. Movements are restricted to special occasions. When his characters have to go places, they jump from one place to another without travelling the distance they are supposed to travel. They travel, so to speak, in sealed containers. His characters do not see the landscape along the route. Probably, they have no interest in or curiosity about the all-too-familiar landscape.

## Place-Person Symbiosis

The influence of his Udaipur-based teacher, Bhattacharya, is discernible in Yadav's writings. In his classroom lectures, Bhattacharya went eloquent to describe the relationship between man and environment. These lectures seem to have left lasting influence on Yadav's young mind. We repeatedly find in his short stories and novels situations in which Yadav effectively creates place-person symbiosis to heighten the relationship between man and his immediate environment. We come across such a situation in *Sukhiyā Sab Sansār*, Sukhiyā, the hero of the novel, is a shepherd who takes his flock of goats for grazing to the hills adjoining Mainpur day in and day out. The hills are the focus of his life-world. They assume a great variety of meanings to him. They have existential significance for him. They provide pastures to his flock. They are sustainer and provider to him and are intertwined with his life- world. Sukhiyā spent most of his working life in the hills, tending his goats. He has deep experience of being intrinsic part of the hills. Towards the end of the novel we are told that Sukhiyā sold his flock of goats and bid farewell to the hills. Separation makes him conscious about his affection for the hills. He loved the hills so much that he shed tears at his departure. Associative experience became intense when he was given farewell by other shepherds. Feeling for the hills was aroused from memorable experience of life-long attachment to them. His life was so intensely entwined with the hills that there developed a place- person symbiosis. By placing the activities of his hero in the hills, Yadav has transformed them into an existential place.

Yadav creates a place of intense activity in *Banjar Dharti* also. The *Patwār Ghar* (office-cum-residence of the *Patwāri),* a single-roomed house located on the eastern fringe of the village, was the focus of the whole gamut of political activities of the village. Here the *Patwāri,* the school teacher, the *Grām Sachiv* and the *Sarpanch* joined together to formulate their strategy to control village politics. At night, it was transformed into a site for carnal pleasures amidst dining and wining and occasionally womanising. The *Patwār Ghar* had become the focus of attention for the landless *harijans,* where, under the thrall of scheming *Sarpanch* and amidst pulls and counter pulls of pressure groups, the *Patwāri* was busy writing their land allotment titles. The climax of the activities was reached when the Mund*ā*war *Tehsildār* held a meeting of the *harijans* at the *Patwār Ghar* for the distribution of these

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titles. After a religious lecture and sumptuous feast, he gave away the *pattās* to the *harijans,* overwhelmed with joy. The *Patwār Ghar* emerges as *the* place in the novel where destiny of hapless *harijans* had been written in land allotment titles and where their hopes and aspirations seemed to have been realised in palpable form of the *pattās.*

## Social Moorings of his Characters

Yadav deals with the world at micro level. His social scale is also small. The plot revolves round one family in *Sukhiyā Sab Sansār* and a few families in *Banjar Dhartī.* Secondary characters, elected members of village *panchāyat,* petty village-level government officials are brought into the story obliquely; they perform their roles and disappear from the scene perfunctorily. The shenanigans of the *Sarpanch* and the officials are exposed; and they receive sneering, sometimes pungent comments from his characters.

Both the novels have similar rural settings and are focused on the life-worlds of peasant proprietors and landless *harijans.* His characters interact in the tradition bound Hindu hierarchic rural society. His subaltern characters carry on their struggle against, or offer resistance to, the hegemons in the society within the constraints of the hierarchic social order. In *Banjar Dhartī*, for example, the *dalit* resistance to the stratagem of upper caste landed peasantry is offered in the cultural milieu of hierarchic Hindu society. *Harijans* do not take on high caste peasants directly. They offer resistance obliquely and in subdued tones. Similarly in the other novel, Dhanna's wife fights patriarchy within the constraints of a joint Hindu family. She uses her husband as a front for her struggle to gain power to have say in family affairs. The characters fighting the hegemons have to remain within the Hindu social system; they are not in a position to shake it off to raise the banner of revolt.

## Localization of Universal Themes

There is contradiction between setting and themes in his novels. Although his novels are place-specific and his characters are rooted in the small socio-cultural milieu of *Rāth* region, yet the plots of his novels are informed by universal themes of Hindu society. He does not specifically deals with local issues. Rather universal themes are set in small restricted localities. He, in fact, localizes the universal themes. Therefore, he cannot be labelled as a regional novelist as some critics have done (Atur, n.d.). One of his novels deals with the frustration and angst of an infertile Hindu wife in the web of relations in an extended joint Hindu family where the younger sister-in-law is all set to break the bonds of joint family to free herself of the hegemonic patriarchal shackles. His other novel focuses on the problems that hapless *harijans* face in hierarchically differentiated Hindu society. The plot of the novel highlights the problems that landless *harijans* face when they are about to be allotted government land for cultivation. Parenthetically, it may be stated that Rajasthan Government under the policy of economic empowerment of weaker sections of society allotted agricultural land to rural *harijans* in the state.

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## Concern for Otherness

As a nascent short story writer, Yadav lived in the exhilarating company of leftist and progressive writers, critics and teachers at Bikaner for five years (1971-76), where he honed his skills of story writing. He acknowledges his indebtedness to Harish Bhadani. Ramdev Acharya (both leftist writers and critics), Y.P Singh and P.S. Srivastav (progressive writers and college teachers). He imbibed progressive ideas in their company. Though Yadav is not a leftist writer (his works are tree from the class-based rhetoric of communists), yet progressive ideology informs his fiction. There is subtle inbuilt inclination in his novels towards the downtrodden, the weak, the indefensible and the deprived. However, he is not favourably disposed towards the hegemons in society, whether elected leaders or government officials.

There is concern for otherness in Yadav's novels He speaks compassionately for *harijans* and women. In his fiction there is undercurrent of empathy for them. He tries to represent their experiences faithfully. Moreover, in his novels, voices on the margin are heard—voices that have been silenced from time immemorial by hegemons in Hindu society. Here subalterns speak for themselves and their voices may be accepted as authentic. They speak against hegemons and hegemonic social order In that sense, his novels have liberatory potential.

## Cultural Contestation

Yadav creates sites of social resistance and cultural contestation in his novels, sites where hegemonic and counter-hegemonic tensions are subtly played out. There is plurality of cultures in Mainpur. It has, on the one hand, dominant culture of upper caste peasants and, on the other, the sub-culture of *harijans*. Meanings are therefore contested as the interests of these social groups are different. *Harijans* contest the cultural dominance of upper caste peasants in *Banjar Dhartī* Peasants on their part create hurdles in the allotment of land to the *harijans* and prevailed upon the *Patwāri* not to allot the village pasture to them. In his second novel, Dhann*ā*'s wife contests the cultural norms of a joint Hindu family and the authority of the patriarch. her resistance to the hegemons in the family transforms the home into a site of contestation. In the following sections we discuss, in some details, the contexts of cultural contestation in Yadav's novels.

## (A) Dalit Struggle for Landownership

In this section we intend to analyze *Banjar Dharti* in the context of *dalit* discourse. The novel tells the tale of a marginalized social group's struggle for ownership of cultivable land in a social milieu antagonistic to such ownership. The public announcement by the village *chokidār* that the government would allot land to *harijans* for cultivation divided the village society into two antagonistic camps—upper caste landed peasantry and poor landless *harijans.* The peasant proprietors fell threatened that the government would impose ceiling on land holdings and distribute the surplus land among the *harijans* They hold a meeting to chalk

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out their strategy to scuttle the allotment of Land to the *harijans.* They thought that economic independence of *harijans* would harm them in many ways. Cheap labour for agricultural operations would not be available, their business of money lending would suffer and an affluent *harijan* community would become another center of power and political contestation in the village.

Some of the peasants were of the view that *harijan* would not be able to cultivate their lands as they had neither the resources nor the skills to raise crops. They would be compelled to borrow money for bullocks, farm implements, seeds etc and, in turn, mortgage their land to the peasants. The land to be allotted to them being of poor quality, they would not be in a position to repay the loan. Ultimately, *harijan* land would return to peasants, though they were in the know that under the rules *harijan* land could not be mortgaged to upper caste peasants.

*Harijans,* on the other hand, thought that peasant proprietors were selfish and jealous. They did not like economic empowerment of *harijans.* Land allotment to *harijans* was an eyesore to them. *Harijans,* hoped that land allotment would free them from the bondage of landed peasantry, they would have their own land to raise crops and cattle; It would raise their economic status The very idea of land allotment kindled hopes and aspirations in *harijans* They visualized a bright future for themselves and an end to their centuries old upper caste exploitation.

The role of the upper caste *Patwāri* was also anti-dalit. *Harijans* feared that he might harm them He treated them with disdain and angrily responded to their queries He sided with upper caste peasants. At their behest, he agreed to allot waste land to the *harijans* on payment of Rs. 600 per *bighā* instead of village pasture free of cost. He imposed illegal fee on *harijan* applicants and charged leu rupees on each application without issuing official receipts. N'athiy*ā* wanted an official receipt for the 'fix' he had to pay to the *Patwāri.* The *Patwāri* refused to issue the receipt and threw his application to the winds. Nathiyā complained against the *Patwāri* to the *Tahsildār,* who too was not sympathetic to *harijan* cause. He upheld *Patwāri's* decision to charge the 'application fee' and made disparaging remarks about the *harijans - Chamāri Ko Chāchi Kah Diyā to Chauke Men Chli Āyi.* They did not like his abrasive behaviour. But they had no courage to object to it

The *harijans* were eager to know about the quality, extent and location of the land to be allotted to them, The *Patwāri* informed them that each *harijan* family would get a two-*bighā*- piece of land from the government wasteland on the payment of Rs. 600 per *bighā.* It was badland, gullied land, marginal land. The *harijans* at once realized that some trick has been played on them to save the pasture. But hunger for land among them was so acute that they were prepared to accept the wasteland for their fields. They had determination to transform it into cultivable fields, as their forefathers had done for the peasants in days gone by.

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The decision of the Rajasthan government to allot land to *harijans* for cultivation created conditions for redefinition of *dalit* discourse. It changed the nature and tenor of *dalit* discourse. The focus of the discourse shifted from 'social justice for the harijans' to "economic empowerment of harijans.' In Hindu society, landownership is tied to the hegemonic culture of upper castes. It has many ramifications. Land allotment to *harijans* is a step towards equitable distribution of wealth in a society structured on the principle of inequality. Landownership is a potent instrument of economic empowerment. It raises the 'status' of *harijans* in Hindu society. It frees them from the bane of landlessness, deprivation and dependence on landed peasantry for sustenance. It releases latent liberative forces as it emboldens *harijans* to contest hegemonic order. Landownership empowers them to reject the meta- narrative of hierarchic Brahmanism. Above all, it leads to a change in the structure of feelings of *harijan*s towards other social groups. But there is something missing from this argument which Nathiyā found out on his visit to a neighbouring village, called Chandpur, where a *harijan* wielded political power. The Chandpur harijan *Sarpanch* not only asked the village *Patwāri* to allot land to *harijans* from the village pasture free of cost but also helped them in getting bank loans for farm implements, draft animals, seeds and fertilizers. The upper caste Mainpur *Sarpanch* did not allow these benefits to accrue to the *hurijans.* Tlie Chandpur example lends weight to the oft-repeated assertion of *dalit* leaders that political empowerment of the *harijans* is the *sine qua non* for their social uplift and economic welfare. The argument runs that if they have power, their social and economic status will improve automatically. One of the prominent *dalit* leaders, Kanshi Ram, throwing all political norms to winds, single-mindedly persues a policy for the political empowerment of *harijans.* He succeeded twice in installing his epigone, Mayavati, as the Chief Minister of Uttar Pradesh who did a lot for the socio-economic uplift of *dalits* during her tenure. Since then she has become a symbol of *harijan* power.

An important element o*f harijan* resistance to high caste domination is that they cannot openly express their feeling against the hegemons of upper castes because they live in a hierarchically structured society where the ideology of caste hierarchy negotiates relations between the dominant and subordinate groups fundamentally unequal in terms of power. Moreover, *dalit* resistance leadership is based on shaky, unstable support. The upper caste Mainpur *Snrpanch* succeeded in sowing the seed of dissension and discontentment in the *harijans* against the leadership of Nathiyā, who was eventually, isolated from the *harijan* masses. They started distrusting him they believed that Nathiyā was the cause of all their troubles. Nathiyā once thought of contesting election to the village *pamchayat* but after the *Sarpanch's* stratagem against him found his prospect of winning election bleak.

Nathiyā wanted but dared not to say that upper caste *jajmāns* have exploited them for centuries, treated them as animals, beaten them for no fault and subjugated them for *beggar.* They were poor *chammārs.* They lived in a society dominated by upper caste *jajmāns* who

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were selfish and were of no help to the *harijans* Nathiyā thought that if he spoke against upper caste dominance, he would invite trouble.

There is no direct discussion of *dalit* discourse in *Banjar Dhartī*. But it is a novel in which *dalit* struggle is transformed into actual relations of power between the upper caste peasants and the *dalits*. Power is inscribed by subject positioning in a social hierarchy. In Hindu society, the ideology of caste hierarchy is the primary site for representation of power as it is intimately related to social control. Power accrues to the upper caste peasants because of their advantageous positioning on the ladder of caste hierarchy which is why they acquire dominant position in village society. Power, on the other hand, does not flow to the *harijans* because of their disadvantageous positioning on the caste hierarchy. The ideology of caste hierarchy, in fact, helps in othering the *harijans* in Hindu society as hierarchical valuation is different for them vis-a-vis the peasant proprietors. Moreover, their exclusion from village social space and landlessness are additional factors that help in othering them. Above all, peasants own means of production, they are the jajmāns. They dole out sustenance to the *harijans* under the *jajmāni* system Economic and social superiority of upper caste peasants therefore manifests itself as domination of *harijans* to subjugate them for their own ends. The contrasting positioning of these two social groups create acute power imbalance in village society owing to which peasants easily subvert *dalit* resistance. There is hidden persuasion of the implicit ideology of caste hierarchy It imposes a system of symbolism and meaning upon *harijans* in such a way that they are experienced as legitimate. The legitimacy hides the power relations. It allows the imposition to take place. It is difficult to escape symbolic dominance and resistance to it is very difficult. Moreover, *dalits* have internalized the ideology of caste hierarchy. It is therefore not easy for them to tree themselves from its oppressive regime. Kānshi Ram, who is fighting upper caste dominance of the *dalits* with a vengeance, has unwittingly adopted blue colour for his party flag, a colour which the Brahmanic ideology has relegated for the low castes. Thus he has not been able to free himself completely from the tentacles *of* the Brahmanic ideology.

The novel was written during internal emergency rule (1975-77) when the Central government imposed direct social control. One of the coercive measures adopted was compulsory family planning. The Rajasthan government laid the condition that land would be allotted to only those *harijitns* who undergo vasectomy Fear of surgical operation gripped the *harijun* community so much that all male adults went underground. But hunger for land among the *harijans* was so acute that eighty-year old Nathiyā's father offered himself for the surgeon's scalpel to obtain a small piece of land for his family.


## (B) Construction of Femininity in his Novels

Yadav has created fractured identity of women in his novel, *SukhiyāSab Sansār*. He has constructed two versions of femininity, two women characters moving in different directions

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in a space structured by patriarchy. There are significant differences between the two women. Their interests differ. On the personal plane, they face different problems. One of them is actively engaged in demolishing the structure of patriarchy and the other, infertile, stoically bears the weight of lineage- based Hindu patriarchal order. Her infertility is her greatest enemy. It has besieged her on all fronts. It is also her greatest weakness. She cannot fight for her honour in the family and society because she has tailed, as a Hindu wife, to bear a male child to continue the line of her husband (*Manusmrti,* 1992: 9, 33-38).

This section analyzes *Sukhiyā Sab Sansār* in the context of Indian feminism. The plot of the novel revolves round a set of two problems: (i) The problems that a younger sister-in-law creates in a joint family to break herself free from hegemonic control of the patriarch of the family, and *(ii)* the problems of an infertile woman in the family.

## (i) Struggle Against Patriarchy

Sukhiyā, his wife (Misarli), old parents, two sisters and a younger brother, Dhann*ā*, lived in a single house. It was an extended joint family, a happy family with a lot of hustle and bustle. Mixed farming was the mainstay of the family. Sukhiyā tended family's flock of goats and the younger brother, Dhanna, tilled the family's land. Sukhiyā's two sisters helped his wife in household chores. Their old parents were contented to have recourse in their old age to a caring and sharing family.

The two sisters were married off. They left Sukhiyā's family for their fathers-in-law's houses. Last of all, Dhannā was married and a new bride, Gyārsi, was added to the joint family. Initially, the two sisters in- law lived in harmony. But after two years, Dhanna's wife went on a course of confrontation with the hegemons of the family. She revolted against the cultural norms of an extended family and the patriarchal dominance of elder brother in-law. She waged a protracted struggle in the family to create her personal domain in the house. She adopted so aggressive a posture that Sukhiyā and his wife dared not trespass her domain. She transformed the house into a space of conflict, an arena between the two warring sisters-in-law and a site of contestation. She transformed a happy family into an unhappy one. Sukhiyā's wife was so much harassed by her sister-in-law that she began to lose sense in her home and there was fragmentation of her personality. For Sukhiyā, good times were lost.

Using her timid husband as a front, Dhann*ā* 's wife encroached at the edges of patriarchal power in the initial stage of her struggle. She would not allow Sukhiyā to hold a simple feast either at the death of his father or at the birth of her first male child. She coerced Sukhiyā to hold big gala feasts on both the occasions. Later on, her struggle became more intense and her voice more shrill. She called Sukhiyāa dud and his wife a barren witch. She manhandled her at one stage. She created conditions of intense conflict in the house to break herself free from the hegemonic control of Sukhiyā. She compelled Sukhiyā to divide the assets of the family. She claimed the best field, retained the house and pushed out Sukhiyā

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and his wife to the *Nohrā* (pen). She won her battle easily as she faced a childless couple who carried not much weight in Hindu society.

## (ii) Angst of an Infertile Woman

Sukhiyā's wife was besieged on two fronts: on the home front she faced a hostile sister in-law and on her personal plane with the grim reality of infertility. The problem of childlessness is a theme tied up with the prospect of a Hindu family. A family without a (male) child has no future in Hindu culture in which there is emphasis on lineage. To bear a male child is the only theme of a wife in the mainstream Hindu religion. As a Hindu wife, Misarli's main role was to produce a male child to continue the line of Sukhiyā. The crux of Misarli's problem was that after years of married life she failed to bear a child It gradually dawned upon her that there was something wrong with her, that destiny has not been kind to her that it has withheld something vital from her. She began worshipping godmen and gods to get a male child. She went from witch-doctors to doctors in search of a cure. At last, doctors at the Alwar hospital told her that there was something wrong with her reproductive system. Finally, she realized that it was her fate not to have a child.

Sukhiyā and Misarli eventually decided to adopt a male child to fill the void of childlessness in the family. Misarli made peace with her sister-in-law and adopted her male child. But destiny had willed it otherwise. Not long after, Gyārsi took her son back home when Sukhiyā failed to arrange his marriage despite his best efforts.

Indian feminism suffers from a great flaw. It has not taken up the cause of infertile women as vigorously as it has taken up other issues Omvedt (1995) mumbles a feeble appeal that infertile women should be respected in society. Infertile women suffer a lot in their homes at the hands of their husbands, mothers-in law, sisters-in-law and others, Moreover, they are objects of ridicule in society. The mores of Hindu society are also not favourably disposed towards them. Friends, relatives, kinsmen, neighbours all react unkindly to them. The greatest tragedy with an infertile Woman is that it is women who ridicule her incapacity to bear children. In the novel under discussion, Misarli is made an object of ridicule by women around her, especially her sister in-law. They taunt her with barrenness. But, fortunately, there is no mother-in-law syndrome in the novel, nor Misarli's husband harasses her for her infertility.

In Hindu society, the ideology of seed and earth (field) prevails in explaining biological reproduction in women. Women are equated with field and men with seed (*Manusmrti*, 1992: 9, 33-38 Dube, 1986). The ideology defines women by their bodily functions. It is concerned with reproductive sexuality and considers women as vehicles for reproduction. Misarli, like any traditional Hindu wife, seems to have internalized the ideology as a defining characteristic of a Hindu wife. The ideology is capable of implicitly instilling a whole ethic or a metaphysic for a Hindu wife, e.g. it is prime duty of a wife to bear a male

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child to continue the line of her husband for the sake of, among other things, the ritual ancestor worship.

In the lineage-based Hindu social order, the embodiment of the ideology of seed and earth is beyond the grasp of consciousness of ordinary women. They, therefore, collude unwittingly in their construction as earth (field), as vehicles of reproduction. Power works through *a habitus* (Bourdieu, 1977:72). It works from within. The values of the ideology have taken residence in Misarli's mind. She has absorbed it like air or water. She has imbibed the hidden persuasion of an unquestioned ideology (Faucalt, 1988:119, Bartky, 1990:2). She does not feel oppressed by it. Therefore, she is unable to free herself from her own oppression. This is a type of domination to which resistance is very difficult. She feels that she is at fault; she is lacking something for which, she thinks, she is trivialized in society.

Indian feminism is in need of taking bold steps in protecting the honour and dignity of infertile women. They have every right to live with honour and dignity in Hindu society. Feminists should create right atmosphere in the society for infertile women to live with dignity.

## C o n c l u s i o n

Yadav's novels are place-specific but not place-defining. Despite being a professional geographer, he does not write at length about places or landscape. He uses places for symbolic purposes. For him places are landmarks or reference points on a routeless map. Nevertheless, he creates sites of place-person symbiosis. In his novels places acquire meaning because of emotional attachment of his characters to them.

Yadav sets his novels in Mainpur and its environs. By doing so, he localizes the universal themes of *dalit* discourse and Indian feminism. He restricts the operation of power relations to a small defined territory. It may be pointed out that there is no direct discussion of *dalit* discourse or Indian feminism in his novels. But the *dalit* resistance against hegemons and the struggle against patriarchy are subtly transformed into actual power relations in his novels. *Banjar Dhartī* depicts the incipient power of subaltern culture, their economic empowerment and the emergence of a new form of autonomy. It is a novel in which *dalit* discourse is transformed into actual relations of power between the upper caste landed peasantry and landless *harijans. Sukhiyā Sab Sansār* has two versions of femininity. One of the two women oppressed and stifled in the joint family revolts against patriarchy to free herself from its stranglehold. But the other woman, Misarli, who is infertile and has internalized the ideology of seed and earth, does not offer resistance. She is unable to free herself of her own oppression.

**Note:**

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1. Yadav is a talented writer. He could have done some good research in geography had he not turned to writing fiction. His M.A. dissertation, written at the time when quantitative revolution in geography was in the ascendant, analyzes settlement patterns in Alwar district ingeniously using the newly developed method of near-neighbour analysis to arrive at interesting results.

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# Globalization and Contemporary Process of Organization of Space

Dr. Hanuman Singh Yadav*

## Introduction:

The organization of space under the process of globalization has altogether changed the spatial configuration of concentration and dispersal of economic and social activities. This is because the penetration of both domestic and transnational monopoly capital in the production and service sectors of the economy have created and continues to create new spaces with new type of activities and division of labour. The dominance of capital over labour in a class divided has further accelerated the expansion of the capitalist economy. In this regard the question of development of underdeveloped regions and the marginal sections of society has become the cause of concern. Answer to the development process finds opposite explanation on the theoretical constructions based on ideological position, and some time methodological too. This is because the phenomenon is looked upon with the different perspectives. The spatial relationships of organization of space are often analyzed by apologetic scholars only with the facets of the superstructure itself, without looking into the base. Whereas the Marxist theorist explain it dialectically, rooted in the economic order with reference to the class relations, terms of trade between regions, sectors and capital and labour. The argument is that development process and concentration of economic activities are not simple geometric formations and mathematical formulations; Rāther they are the outcome of distinct mode of production and production relations under a specific economic system. The right wing western scholars continued to be busy with theorization of spatial structure and organization of space and their explanation often comes from the forces of prevailing capitalism which are shaping them. The Macro-Economists are also not very clear in understanding and defining development process so as to handle the production of space in their models and theories. The development economics as a distinct field is relatively is young, developed in the post war period, "appeared to be something of a bastard child of growth economics" (Dreze and Sen 1995). It has a clear influence of other social sciences. The understanding of development is confined uncompromisingly to the growth of gross domestic product or per capita income since classical theories. Dreze and Sen (1995) emphasized that "the basic objective of development as the expansion of human capabilities was never completely overlooked in the modern development literature, but the focus has been on the generation of economic growth, in the sense of expanding gross national product and related variables".

Krugman (1998) attempts to build New Economic Geography and tries to explain contemporary development process, where he agrees that the spatial organization principles of economic activity play an important role in political economic life but finally lands up on the same ground that of earlier ones; that of the principals of organization of space are self

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organizing. His suggestion, that comparative geographical advantage, might be theorized in terms of regional development and international trade. The classical studies on location by Ricardo, Thunen, and Losch have their basis in comparative advantages within the market economy. They neither talk about regional development nor the political economy. Contrary to the above approach, the arguments is that the economic system shapes the process of development and a large number of evidences are available to show that the production relation are determined by the mode of production, in which the productive forces choose the required contemporary technology for maximization of the class based benefits.

The capitalist process of accumulation has inherent contradictions, which gets manifested into crisis. The growing capital power in the built environment (i.e. creation of infrastructure for production, circulation, exchange and consumption) is regarded as the process and it is this process always as the theory of accumulation suggests leads to crisis. These crises may be observed first in the place of capital accumulation because over accumulation and investment falls in crisis. This expansion of capitals does not follow the demand pattern of commodities by people Rāther it gets diverged because of internal competition and only for the needs of capital. Thus the crisis appears in the secondary and tertiary circuits of capital. This also affects the invested value of built environment and the commodity production. Finally it affects the flows of capital in the services sector such as education, health, transport and other social welfare in terms of expenditure and altogether new organization of space emerges.

To understand this phenomenon in a more simple expression, it may be presented such the growing power of monopoly domestic or foreign capital in the economy within the economy in secondary and tertiary sector creates imbalance. These imbalances may be observed within the capitalist class as well as between the bourgeoisie and proletariat classes. They form the structure of economy and can be seen as the problems and predicament of economy and growing inequalities between regions and people. The common superstructure, which emerges is the growth of inequality in income, consumption and living standard, in housing, pollution, shortage of social infrastructure, and fall in employment and wages rates with a decline in labour productivity. The free play of domestic and transnational capital, under the market, during the WTO regime, displays the above characteristics in the Indian economy, which has been creating inequalities and uneven regional development.

**Debate of development underdevelopment:**
―The development underdevelopment relationship is not comparative one in the sense that some places are more development then others. The underdeveloped is not just lack of development. They are related both through the common historical process that they have shared during the past several centuries and through the mutual, that is reciprocal, influence that they have had, still have, and will continue to have on each other through history‖ (Frank 1975). The forces become active under the dominance of market and capitalist mode of

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production to produce inter personal and inter regional disparities. The phenomenon is not simplistic. One has to understand the historical dialectical principles to reach to the conclusive understanding about the development and underdevelopment relationship. Contrary to the above the apologetic scholars find it a natural process emerging out of the natural process of development of the economy (like that of Rostow's stages of development). They fall into TINA ("there is no alternate") to capitalism syndrome and find course of development and underdevelopment consequences, within the causal effect relationship of elements of superstructure.

Ricardo and his followers have theorized this as the law of "comparative advantages". A similar proposition was extended as relative advantages of centrality leads to the location of central functions and economic activities at the central places and regions under market principles and resulting into organization of space (Christaller, 1933) and Losch, 1954). Tinbergen (1961) manifested market-oriented model of "isotopic plain" for minimizing total cost of production and transportation. The "stages of growth" of Rostow (1962), "jump or discontinuity" of Marshall and "low level of equilibrium trap" of Liebenstien, all of them provide no space to the class relations and exploitation of one region by others.

The development is not a continuous process Rāther they have reached the present stage at the cost of other countries, as Frank (1975) observes that ―underdevelopment and development are the simultaneous and related products of a single integrated economic system: Capitalism, where one part exploits another‖. The principle of "cumulative causation" and "back wash effect" of the Gunnar Myrdal (1958) stand more nearer to the reality. The process makes rich richer and poor poorer. He convincingly demonstrates that the uncontrolled functioning of market mechanism increases disparities in the socio-economic development. Albert Hirschman (1958) developed a similar concept of "polarized effect" and "trickling down effect" and argued that the polarization effect must be taken seriously. This is counter to the theory of international trade of the traditional belief, expressed by John Stuart Mill that contact between dissimilar groups is always a source all-round progress (Hirschman 1977). Apologetic scholars call it model of modernization and argue that Multi National Corporations (MNCs) act as factors of development and diffusion of modern technology.

But under neo-imperialism international monopoly capital intends to not only to direct control over government and rapidly accumulated power, but is active in creating a new set of imperialist contradictions between the economic expansion of transnational corporation and state monopoly regulations of the economic development of countries and regions (Lavrov and Sdasyuk, 1988). This point is more elaborately emphasized by Lenin (1973) in his book "Imperialism: the Highest Stage of Capitalism" that the "unequal economic development under capitalism as a universal law characteristic of all stages of capitalist development and embracing all parts of the world capitalist economy, including its periphery. The effects are intensified under imperialism. The finance capital and trusts do not diminish but increase the differences in the rate growth of the various parts of the world economy."

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**Colonial Organization of Space**:

The emergence of economic structure in India primarily is the manifestation of an imperialist economic legacy of British rule and dependent development of growing capitalistic mode of production, which the post independence period governments continued without much change. The production relations and development of productive forces, during British imperialism were exploitative in nature to meet the growing industrialization needs in the metropolitan country. The British imperialism inherited India wide spread backwardness, poor physical, social and economic infrastructure, low per capita income, capital formation and production and productivity of land, labour and capital, and almost universal poverty, illiteracy, unemployment and unskilled man power. The regional disparities were at its apex showing speculative development poles and vast areas of widespread backwardness in the rest of the country. These problems faced by Indian economy at the time of independence have been the end product of exploitation of people and regions by nexus of imperialist state power and the petty bourgeoisie and feudal landlord classes in India. The suction mechanism was operative for extraction of regional resources and raw material to feed the industry of imperialist power. To facilitate the imperialist exploitation infrastructure was created mostly in and around the metropolitan port cities and in their hinterlands. The dependent development was confined to the metropolitan cities, their hinterlands and the corridors formed along the railway and road lines joining them. As a consequence a chain of industrial towns emerged along the trunk routes joining Delhi, Mumbai, Chennai and Calcutta, besides these areas which fall in the corridors, the other parts of country remained devoid of infrastructure and deprived of development.

Along with the general under development, wide spread regional disparities could clearly marked in term of ‗developed enclaves' and vast backward regions. It has been substantiated by a number of studies that these characteristics were inherited from the colonial past. The exploitative and dependent development during British imperial power was in tune with the feeding of industrial inputs as raw material end resource from India (C.N. Vakil). The imperial power controlled the resource mobilization from the port cities of Bombay, Calcutta and Madras. As a result a pattern of agglomerated growth emerged with ‗island of concentrated growth' in and around these metropolitan areas and the corridors joining them. According to Bharadwaj (1982) ―as late as 1948, the presidency states (Bombay, Calcutta and Madras) accounted for 76.6 per cent of total industrial production and 77 per cent of industrial workers. The share of mineral rich states of Bihar, Orissa and Madhya Pradesh was 9.6 per cent industrial production.

The economics structure evolved during colonial period depicts all the characteristic of a imperialist capitalist economic system with a mix of feudal and capitalist mode of production. The colonial heritage to India, that of high incidence of poverty and

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unemployment, low productivity of labour and capital, vast underdeveloped areas devoid of infrastructure, confirms the uneven development.


**Post independence Experience:**

The power was transferred from the imperialist power to the coalition of Indians petty bourgeoisie, landlords, feudal and professional elite classes. The bourgeois governments under the growing influence of capitalism could hardly succeed in achieving the constitutional obligations of equality and social justice and put under check the concentration of economic power. The government intended socialist/welfare state, to alleviate poverty, unemployment and illiteracy and to remove general backwardness. This happened because the bourgeois governments while progressing on the capitalist path of development envisaged achieving the ‚socialistic' goals that was later added to the preamble of the constitution.

The task to overcome underdevelopment was given to the planning commission through centralized five-year plans with supportive constitutional provisions. The philosophy behind the strategy was to ‚take care of growth of economy and in-turn the growth will automatically take care of the problems'. The Harrod-Domar growth model was the choice "higher investment in the economy leads to high growth in GDP and thus higher per capita income, there by resulting in high rate of savings and therefore more availability of capital for further investment" this cyclic capital investment through multiplier effect will generate growth impulse in the entire economy equally to all classes and regions with a natural distributive justice. But one should not forget that capital investment does not have mechanical relationship to distribute the fruits of development proportionately in a highly class structured society.

The post independence period with reference to governance and economic development, the three phases are designated as "import substitution" up to mid sixties, where the emphasis was given to replace the imports of goods and services including food grains by the domestic production. To achieve this objective public sector investment was used to create basic infrastructure to facilitate agriculture and industrial production by private capital. The second phase of "self-reliance" was to consolidate the assets acquired by private capital in the hands of feudal landlords and bourgeois class. This phase provided the protection to the domestic monopoly bourgeois production from the transnational capital (many of the big business houses wanted this to continue) till mid-eighties. The third phase of development in India is designated as ―globalization and liberalization‖, the period of structural adjustment. Under this phase the economy is opened up to the free play of market, for the domestic and cross border capital, goods and services. During all the three phase the Indian economy under the capitalist mode of production along with the creation of public sector in no way can be considered as socialistic. Aggregate expansion of productive forces does not ensure benefits to accrue to all classes and regions and in fact it did not. This is confirmed by the single fact that

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the ―objectives‖ of eleven five-year plans and many annual plans have remained almost the same and unchanged during the last sixty year of planned development.

In the recent past, Indian economy has gone through a drastic structural change, a major shift from Nehruvian model, under the pressure of WTO. The state has completely withdrawn in phased manner and encouraged free play of market. The reforms promised high rate of growth, raising employment, globally competitive industry, accelerating exports and balanced budgets and eradication of poverty as a big product of growth, but is resulting into burgeoning unemployment, stagnating industry, retrenchment and closures, mounting trade deficit. What is more, agriculture has been starved of public investment, guaranteed remunerative prices virtually abandoned, and agricultural products to unfair competition resulting in widespread and precedented poverty in the rural hinterlands (Delhi Declaration, 2001).

The disparities among developed and backward states have shown an increasing trends this was basically attributed to centralize planning based on sectoral growth and allocation of found for investment. These processes of planning developed a nexus among dominant ruling class under mining the interest of the poor people and region.

Though late, but realization of the problems of non-fulfillment the aspiration of poor people and backward regions let two re-thinking about the centralized planning process. As a result the 'growth plus strategy' was subsequently supplemented with decentralization of planning at state and regional level. Along with this target group and area specific programs for poor section of society and backward regional where initiated. For these purpose planning commission used a number of prescriptions and to improve upon the condition these targeted groups and regions. Guidelines for the decentralized planning through the hierarchy of state, district and block level where prepared. The planning at this levels some show remained non-starter except the preparation of some model plans for some district. But on the other hand, target group oriented programmes for weaker marginalized people such as IRDP, NREP, SFDA, RLEGP , Antyodaya, Jawahar Rojgar Yojna and others were initiated to alleviate poverty and generation of income and employment among the poor. Similarly area specific programmes were also initiated such as Hill area development, drought prone area, Tribal area, desert area development programmes. Sub plans were prepared for some of the areas.

The result these programmes for backward area development have been frustrating because of a number of reasons. The failure attributed to a number of factors. The main source the failure came from the system itself, because the system that generates those problems, by virtue of the character of the system cannot find solution to them. The inner contradictions in the economy did not allow the gains to percolate down the hierarchy. Probably the socialist results were expected from the capitalist path of development.

The piece meal approach could provide no solution to the problems and predicament of poor regions. To encounter the above problems, the new state, as the power under the guidance of bourgeois government, placed the development agenda before the nation (Hasan,

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1989), where the political order had the "basic coalition of classes including bourgeoisie, the professional groups, land lords and rich peasants" (Prabhat Patnaik 1992). Hasan (1989) further explains that " it was the class content of this coalition Rāther than the functional arrangements of the political order operating as a loosely organized bourgeois coalition accommodating the pressures of the much smaller opposition at the periphery, which played the decisive part in influencing the structures of dominance and the " strategy of governance" and "the development."

## Globalization and Contemporary organization of space:

The metropolitan countries enjoyed the domination in terms of political power, therefore, economic and social during colonialism of traditional type. In the post war period also they could maintain the growth of economy to a satisfactory level. This get going with high growth was due to the exports of goods and machinery and the inputs of science and technology. This growth slowed down gradually during 1980s and the recession in the capitalist world became the continual feature. The growth could only be revived through the transfer of economic burden to the economies of the south. The meet this and the GATT was selected as the vehicle. Under the GATT agreement of Uruguay round, later it became statutory body, the third world countries brought massive structural adjustment suited to the metropolitan capital. The retreat of the state through concessions to the private sector and post liberalization, permitting free flow of foreign direct and portfolio investment, deregulation of domestic and foreign private capital and disinvestment of public sector paved the way for exploitation by the monopoly capital.

Though, the alliance of the state with capital is not new to Indian economy. The mercantile capital and British imperial state displayed the close association for exploiting the resources. This metropolitan capital had the free play and dependent development may seen in creation of infrastructure and investment in production. It is not difficult to find this alliance between the domestic capital and the state in India during the post independence period too. The private capital was always provided with favoured environment. The public sector remained sub servant to the capital. The social obligations were always linked public sector and private capital was left in the post liberalization period and there is complete fusion of state with the monopoly private capital.

There is a strong correlation between the property sectors, where the expansion of capital in a specific direction yields, a particular type of production process and thereby the division of labour. In the post liberalization era, the domestic capital has overpowered the public sector and the small capital. The built environment i.e. the creation of infrastructure for production of goods and services is shaping as per the capitalist mode of production with the prime motive of profit maximization. Health and education are the examples for that purpose. The public sector services are undermined by the private nursing homes and public schools and private professional colleges. These services are out of reach of the working class. The

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capital creates extra surplus value on two accounts, first they do not guaranty the quality and secondly in a labour surplus urban economy, the wage rate confirm, the Marxian first circuit of surplus value. By and large, large part of the labour force find job in the informal sector, where the exploitation of working class is maximum. The economy almost has reached to a saturation point and has stopped generating employment.

The process essentially implies the creation of physical and social infrastructure. This basic infrastructure is a precondition for the economic development and consolidation of economic power of capital. The centrality and modality level is the other expression of location of central functions, which the urban places provide to the system. The location of this infrastructure, of which the transport, power and financial institutions constitute the core, is not disorderly. This location and size or the level of these central functions and services are hierarchic in nature. And the hierarchies of this infrastructure represent the hierarchy of urban centres within in system.

The concentration and localization of production represents the investment as a rule, the capital flows to the areas of high returns. Because of the locational advantages of agglomeration and other economies, the urban process gets influenced by capital. The type of linkages developed under the capitalist economy between the centre and its hinterland are exploitative in nature, which essentially make the surrounding small towns dysfunctional. The result is collapse of hierarchic order of functions and towns equally geographical specialization and the division of labour in a natural course disturbs the rational of space in terms of physical and social infrastructure.

In a labour surplus capitalist economy, the reduction of labour power and wage squeeze results into a considerable reduction in income. The terms of trade under the capitalist process are in favour of capital and urban areas. And as a consequence, the real income of the working class remains insufficient to meet the basic needs. This gives rise to the change in the consumption pattern. The poverty has the multiplier effect and the consumption of food and the services. Most commodities fall outside the reach of the poor. The only commodity with the working for sale is labour. The neo-colonialism under the WTO regime has significantly influenced the job market and wage structure. The urban process in a broader sense has adversely affected the purchasing power of the poor and marginal class. The capital flow remains horizontally mobile. This means the upper fire percentile people exchange money. It does not reach to the poor in a proportion what it produces. This turn changes the commodity production and the capital goods remain outside the reach of these masses. Similar is the case for basic services such as health and education and other welfare services, they become so costly that the poor cannot afford them.

Political economy of capitalism and theory of space economy with particular reference to the division of labour and location of productive forces reveals that the organization of space found explanation in correlation among the traits of superstructure without even

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referring the economic base and mode of production. The globalization of finance capital is generating new economic spaces and producing uneven spatial development.

**Epilogue:**

Globalization has contributed to the phenomena of increasing inter personal and interregional inequalities under the capitalistic mode of production. Income inequalities among states and also among social groups have increased sharply during last twenty years of globalization. The rural urban divide on account of income, consumption, investment and creation of infrastructure has widened. The macroeconomic non-spatial variables like growth, gross capital formation, savings, export, inflation, and budget deficit have shown the concurrence with FDI, but on the other hand the real issues like poverty, unemployment, regional disparities have not been addressed. The spatial configuration of economies has shown sufficient evidence of polarized growth and concentration of capital. A new type space has been created both at regional and of urban level, which is a testimony to the growing disparities. A speculative development at selected centres and creation of conditions of underdevelopment traps for the rest of the areas with new division of labour. The sectoral development of the Indian economy is also shown direct concurrence with the growth of both domestic and global finance capital. Agriculture sector, on which the Indian population is dependent the most, is victim of the process and is been pushed to the marginal conditions. The industrial composition and development has also shown the tendencies of investment and growth in selective areas of automobile, telecommunication, information technology and capital goods production. Infrastructural development has also been location biased and the development of road network, power, banking, education, and health has shown polarization tendencies as a result the hierarchical structure of services has collapsed.

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# Primary Health Care in a Globalized World
## Dr. Krishna Nandan Prasad*

―Wealth is lost, nothing is lost,
Health is lost, something is lost,
Character is lost, everything is lost.‖

**Introduction:**

In old days, wealth used to be attached the least importance in human society. This might be due to abundance of wealth all-around man. Even, health was given not as much importance as character which lost was regarded an ultimate and irreparable lost. But, this concept has taken a u-turn in a globalized world where both health and character have been pushed into the background. The rich and elite class has shown others that wealth is lost, everything is lost. Therefore, it is earned by hook or by crook, by all means. In the era of globalization, everything is salable; every service is payable. The noble profession of health practice has become a costly naked practice of playing with the patients' life. So, first of all, it needs a conceptual understanding of its varying delivery in different parts of the world. Thereafter, the discussion will be supported by some facts and figures from India. In this light, primary health care in rural, tribal and backward areas becomes a pertinent area of discourse at the conceptual level along with discussion using facts and figures appearing in daily life, and particularly from Chhattisgarh.

Chhattisgarh, a newly created state out of Madhya Pradesh in the end of 2000 (on 1$^{st}$ November, 2000), has contrasting experiences of the trio processes of globalization, liberalization and privatization, as pre and post state formation period. In the earlier situation, being placed at the peripheral capitalist location from the growth poles, growth centres and main development corridors (e.g. Bhopal-Bina-Gwalior, Hoshagabad-Itarsi, and Jabalpur-Satna-Katni) did not attract as expected by the central government. This situation got changed drastically with emergence of new growth poles, growth centres and development corridors in the state. But, again, regional disparity in development widened; gap between the rich and the poor increased, as public sector paved the way for origin and growth of private sectors in all spheres of life encompassing manufacturing industries to social services like education, health, insurance and finance. In this light, this topic has been chosen for analysis here.

**Objective:**

This paper has two-fold objective. First, it aims to find out the gaps between normative values accepted for establishing primary health care system in the rural and tribal areas and the existing realities at the ground level. The facts and figures in this part of the study merely fulfill the objective of ‗what is the existing scenario in this social sector in case of

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Chhattisgarh state‘? And so, the second objective is to analyze and understand the very nature of development process particularly in the era of globalization, liberalization and privatization in this peripheral capitalist economy.

This presentation is based on both tertiary and secondary sources of data. Data on norms and existing gaps have been taken and compiled from the Human Development Report, Government of Chhattisgarh, 2005.


**Conceptual Aspect:**

The old-age saying depicted in the beginning indicates that health has been a common theme in all cultures of the world. But the concepts of health have been changing with advancement of knowledge. Traditionally, it was **Biomedical Concept** that regarded health as ‗absence of disease‘ (Park, 1965:11). Thereafter, appears **Ecological Concept** that defined health as ‗relative absence of pain and discomfort and a continuous adaptation and adjustment to the environment to ensure optimal function‘ (Dubos, 1965). Introduction of **Psychological Concept** considers health as ‗a both biological and social phenomenon‘, while the **Holistic Concept** deals views health as ‗a sound body in a sound mind, in a sound family, in a sound environment‘ (Park,1965:12).Here, we have a widely accepted definition of health put forth by world Health Organization (1948) in the preamble of its constitution that reads, ―Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity‖. Now, it also adds ‗socially and economically productive life‘ (WHO, 1978). Viewing health of an individual , or group of individuals as an important indicator of development, WHO used terms like ‗standard of living‘, or ‗level of living‘, or more recently ‗quality of life‘ (It is measured on a 100 point scale, where 0 indicates the ‗worst‘ and 100 the ‗best‘ performance in the area of human health.

Health care means ‗services provided to a man in order to have a good health‘. This service is required over time and space because of a host of factors namely incidence of general and fatal diseases, malnutrition of both types over- and under- nutrition, psychological, social ethos and some cultural practices. Health depends not only on the consumption of required food grains, good housing, clothing, sanitation and education, but also on health care facilities for timely treatment of any ailment. ―Poor health conditions are intimately linked with almost every aspect of life in South Asia‖ (Myrdal, 1968:1553),.This has to understood in its totality. This is also necessary so as to get the answer of the wide spread prevailing notion that ―Human health is cheaper than health service as commodity‖.

The concept of mixed economy was strongly advocated and pursued by the Indian Government after independence. So, it created and developed various sectors and agencies like Public Sector, Private sector, Indigenous System of Medicine, Voluntary Health Agencies and National Health Programmes in order to provide a sound health care to the nation. Thus, it becomes quite obvious that ‗health care system is a sub-system, as ―It operates in the context of the socio-economic and political framework of the country‘ (Park, 1965:519). In other

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words, one has to understand the political economy that acts as an underlying force even in case of primary health care delivery.

Health of man has a great direct bearing upon production, as labour plays a key role in all sorts of production. Despite that, health, along with education, has been put in the social sector. These two segments present a quite contrasting picture in the world divided into the capitalists, socialists and third world countries due to varying production relations. The first one is called the **First World** in which private capital exploits not only natural resources, but also labour to achieve the predetermined goal of ―maximization of profit‖. The system, thereby, gives rise to inbuilt disparity in development between regions, or individuals, or groups. That‘ why, it has been observed since long that ―rich becomes richer, and poor poorer‖. And thus, it is expected that both human health and health care delivery would experience pinching disparity in a capitalist system of governance. The rich have easy comfortable access to more expensive and sophisticated health care, while the poor are deprieved of similalr care there.

The communist countries that follow socialistic path of development are most popularly known as the **Second World** where the state exerts control over the natural and human resources and also over the means of production, thereby does not allow any scope of noticeable disparity in social and economic development including health care. All regions, social groups and individuals are provided timely needed health care facilities on equal footing by the state.

There exists another group of countries called the **Third World.** These are the newly liberated countries which have come out of the yolk of the highest form of capitalism i.e. Imperialism. They are developing and under-developed Afro-Asian and Latin American countries, including India. Ruthless exploitatation of thee counries by the colonial rulers in the beginning and by the financial capital in the later stage of development have ruined their economies to the irrepairbale extent. They had developed a typical bureaucratic system that was wholly loyal to their masters and unapathetic to the masses.

The forecast by martyr Bhagat Singh that ―the system will remain the same after independence; only the British will be replaced by the Congress‖ proved true. This is even to-day clearly visualized and experienced that continuation of the same has only helped the new masters to misappropriate the resources for them; the system is little concerned with the masses. Despite termed as public servants, the bureaucrats do not work in the interests of the people in general. A few countries of the third world, like India, adopted a middle path of development i.e. a system of ―mixed economy‖ in which both the private capital and public sector were allowed to develop. This act ultimately helped the financial capital of the country by allowing it to disproportionate accumulation of capital by hook or by crook. Thus, this system like the first one, not only perpetuateed poverty among the masses due to capture of 80 % of wealth by only 20 % population, but also weakens the public sector by its bureaucrats

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due to their connivance with the private capital. In such a situation, the state of health care cannot remains in good condition.

In an **independent India**, there was a virtual understanding between the government and Indian capitalists on the course of development. The big business houses were not willing to invest huge amount of capital for infrastructural development in the country due to remote and marginally slow profit initial for a longer gestation period. So, the public sector was given the responsibility to develop infrastructure for social sector as well as agricultural and industrial development. Key public industries, institutes, projects and establishments were declared non-profit earning bodies in view of the poor masses, but surprisingly also for supplying its products at much cheaper rate to the private firms. This led to gradual weakening of public sector in terms of capital for modernization and further development on the one hand, and burgeoning of private sector.

The private sector for a longer period of time used to generate huge funds for the rightist political parties to act in its favour. Then, there comes a new phase in the Indian democratic system, when a large number of industrialists, businessmen and entrepreneurs made inroads into the state assemblies and parliament, and grabbed vital portfolio in the ministries. Now, it was quite easy for them to force the government from within to follow the policy of liberalization and privatization; enactment of a new _**Disinvestment Ministry**' at the centre was made for systematically dismantling of Public Sector Undertakings (PSUs) in favour of private companies at the thrown out prices. Inviting and giving free hands to Foreign Direct Investments (FDIs) largely in the service sector is another hot issue in this regard. This investment is directed towards establishment of big costly private hospitals, nursing homes and a network of health insurance.

**Health Care - Some Astounding Facts:**
The primary health care in Third world is in a bad shape. This is only because of doldrums – situation in which the poor masses are not in a position to avail costly health care, nor is the government heartily willing to carry out its social responsibilities under the pressure of the market forces operating at the national and international levels. This may be easily understood from numerous glaring incidents pertaining to health care. For example, hundreds of medicines banned in the developed countries decades ago and even in developing countries a few years ago, are openly prescribed and sold in the Third World countries including India. A dozen of infant malnutritioed children died in a government hospitals in Malda, West Bengal due to unavailability of life saving drugs and gross negligence by doctors during the right-wing led Trinmool Government of West Bengal; a dozen persons are deprived of their sights due to malpractices during eye-operation in the state of Chhattisgarh; and many more other cases that make occasional headlines in the print and visual media from across the country.

The other side of primary health care is disheartening reports from medical rackets and drugs mafias operating in the rural, tribal and underdeveloped backward areas in particular

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and in the whole country in general. Forced operation by creating panic at the time of delivery, prescription for numerous tests for an illness, prescription of many costly medicines, burglaries of kidney and other parts of human body, immediate by-pass surgery, wrong diagnosis of diseases and wrong treatments, and what not, all are continuing unabated largely deliberately unchecked and unnoticed in this peripheral capitalist area where everything is done and justified on the basis of money power that also breads muscle power, whereby the sufferers are only the poor.

Rajnandgaon district in Chhattisgarh registers a meager growth of 2.78 % and 3.55 % allopathic medical officers and nurses in respective order from 2006-07 to 2010-2011, while during the same period, the districe has registered a massive growth of Indoo (77.56 %) and Out-door (40.58 %) patients for allopathy treatment. Thus, there is virtually a worsening health care scenario in terms of doctoe- patients and nurses-patients ratio in this backward disrtrict. This amply demonstrates that ―People are trapped in quagmire of vicious circle of ill-health‖, an importane segment of Myrdal's vicious circle. Sadly, the Union Budget, 2012 has not taken any substantive measure to diffuse the ongoing crisis of Rich-Poor Divide. ―Neo-liberalism with human face is being given a slow and quite burial (Patnaik, 2012:5)‖ and has health care in the rural

This, too, proves that there exists a stark disparity in case of health care delivery between the capitalist and socialist systems(**Table 1**); the health providers in the former are basically engaged in the profit making business, while it is the human value which is given the top most priority in the latter where health care is solely taken up by the government agencies. Here, one can have a comparative picture of health care in the stratified world.

**Table -1 : Health Status: A Comparative Scenario of Different world**

| Areas | 1st World | 2nd World | 3rd World (incl. India) |
|---|---|---|---|
| 1. Sanitation | High | High | Low & Medium |
| 2. Drinking Water | Safe | Safe | Largely unsafe |
| 3. Garbage Disposal | Efficient | Efficient | Improper |
| 4. Incidence of Common Diseases | Least | Least | Frequent |
| 5. Infant Death | Least | Least | High |
| 6. Pregnant Mothers _Death | Least | Least | High |
| 7. Longevity of Life | Very High | Very High | ow to Medium |
| 8. Nutritional Intake | Very High | Medium to HighLow | |
| 9. Doctor-Population Ratio | Low | Low | Medium to High |
| 10. Nurse-population Ratio | Low | Low | Medium to High |
| 11. Beds-Patient Ratio | Low | Low | High |

Compiled on the Basis of different sources.

The above inference presents a comparative generalized picture which shows that both first and second worlds have made a landmark achievement in the area of human health.

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Despite existence of contrasting systems, the operation of market force in case of the former (the capitalist world)and the social responsibility of the government in case of the latter(the socialist world) have well taken care of primary health in particular. Communist countries like China and Cuba have health care more accessible, more affordable and more acceptable. Third World countries present a very dismal picture in providing safe drinking water, hygienic sanitation and healthy garbage disposal that cause origin and spread of numerous common endemic and fatal diseases which not only result in poor health, but also enhance death rates. Availability of less number of doctors, nurses and patient beds aggravate health situation from bad to worst. When one goes into the history of its genesis and its spatio- temporal distribution, one finds the legacy of colonial structure with the least budgetary allocation and thus subsequently ―operating in a predominantly capitalist framework and inspired by a modernizing ideology, the government basically developed the western health care system left over by the Britishers‖ (Joseph,1983:45).

**Case of Chhattiisgarh:**

Health care in the rural, tribal and backward areas was conceived and developed in 1974 in a hierarchic order over the space with District Hospitals at the top and Sub-Health Centre (SHC) at the village level. In between, CHC and PHC featured at second and third levels. It was population criterion to provide a better health care delivery (**Table – 2**). Let's have a look at facts one by one.

**Table-2 Normative and Pragmatic Gap at CHC in Chhattisgarh, 2005**

| Categoryy of Health Personnel | Norms Adopted (Ratio) | Existing Gap |
|---|---|---|
| 1. Doctors | 1:3500 | Yes |
| 2. Nurses | 1:5000 | Yes |
| 3. Health Workers | 1:5000 (Plain Areas) | Yes |
| 4. Health Workers | 1:3000 (Tribal Areas) | Yes |
| 5. Health Assistants | 1:30000 (Plain Areas) | Yes |
| 6. Health Assistants | 1:20000 (Tribal Areas) | Yes |
| 7. Farmacists | 1:10000 | Yes |
| 8. Laboratoey Technicians | 1:10000 | Yes |
| 9. Trained Dais | 1 for each village | Yes |

Source: DGHS, 1993, New Delhi.

The above facts show that CHC has become more or less less attractive due to gap between norms and pratces in lack of required number of health care personnel. Its upgradation has not been done in the light of increasing population.

The concept of PHC had been given by the Bhore Committee way back in pre-independent India i.e. in 1946, that was conceived ―as a basic health care unit to the rural

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population with emphasis on preventive and promotive aspects of health care‖, quotes Park (1965:520). A PHC was said to carry out the function of 8 essentials of primary health care[1]. For example, a PHC was expected to serve less than 30,000 and 20,000 persons in the rural and tribal areas respectively. But even after a lapse of 25 long years, both the areas witness a substantial gap between normative and pragmatic aspects of public health care, as revealed in the Human Development Report of Chhattisgarh, 2005 (**Table-3**). The overall need was more than a dozen PHCs (5 in Western, 4 in

**Table-3 Normative and Pragmatic Gap at PHC in Chhattisgarh, 2005**

| Regions | Districts | PHC- popn Ratio | Below Norm |
|---|---|---|---|
| A. Northern Tribal Region | Surguja, Jahpur | 20,000 | Yes |
| B. Southern Tribal Region | Bastar, Kanker | 20,000 | Yes |
| C. Sheonath Basin Region | Rjn, Kabir. Durg | 30,000 | Yes |
| D. Southern Mahanadi Basin | Raipur, Dhamt. Mahasa. | 30,000 | Yes |
| E. Southern Mahanadi Basin | BSP. Raigarh, Janjj-Chanp | 30,000 | Yes |

Source: Compiled from HDI Repor Chhattisgarht, 2005

Southern and 3 in Northern Mahanadi Basin Region; and a few in The tribal regions of Surguja highlands in the north and Bastar Uplands in the South).

This ordering is also practically in vogue due to absence of required number of health centres at different levels, and thereby it lacks effective well connected referral system from lower to higher order of health care. The local level politics also distorts their locations and causes dis-functionality of the hierarchic ordering. Thus, ―the demand for central goods and services (e.g. education and health treatment) falls with distance from the central place‖ (Haggett, 1983:372) shows a deviation from Walter Christaller's hexagonal model of central place.

Concept of SHC at the village level for providing health care at the door-sep sounds attractive. This, too, have exhibited a remarkable gap between the norms and actual population served by it. All the six heavily concentrated tribal districts of Chhattisgarh in the stateBut, its effective implementation remains a distant dream for there in lack a developed infra-structure, well trained and devoted health personnel, timely and sufficient availability of medicines and an effective monitoring. It has further deteriorated in the ongoing processes of liberalization and privatization to become global. Till to-day, Government has not taken hard-and -fast measures to ensure doctor- population ratio in rural and tribal areas, despite their education at relatively much lower cost in government-run medical colleges in the country. Surprisingly for many, even an offer of a handsome pay and perks announced by the C.G. government did not get positive result in the direction of appointing MBBS doctors in the

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rural and tribal areas. This is only because of the fact that it is the weakness of the system which has not made mandatory to work in the so-called areas of disadvantageous.

Thus, there exists a dysfunctional system of primary health care provided by the government agency. So, it compels the poor, generaly illiterate or low level of educational status among the rural and tribal literates and backward classes to fall easy prey of Tantriks, Baigas, Hakims and finally RMPs who are easily and readily accessible and cheaply affordable at their door-step. A large number of users of these health practioners attest this truth.

Yadav and Prasad (2002, 46) had also observed that ―There exists a remarkable gap between the norms and existing realities in case of both CHC and PHC in rural Shujalpur, Madhya Pradesh‖. They ,finally reach to the conclusion that ― The health care delivery system has become dysfunctional, unethical, un-viable due to its very conception and design, on the one hand, and in lack of a strong right political vision and will, on the other‖ (2002:51). Their fear that ―This sub-system will get even greater setback in the era of Globalization, Liberalization and Privatization (GLIP) under the new imperialistic world order dominated by the MNCs in the policy-making decisions; and thus, ill-health of the masses of the third world will continue unabated, unchecked, unscrupulous, as an ever-lasting story of their suffering, distress forever, due to over-looked issues in the anti-pathetic official circle‖ (2002:53).

**Alternative**

Alternatives are always there. The only thing required is to think over it with an open minded. For this, one has to give up the prejudices stored in the conscious and sub- conscious mind. One has to come out of **TINA** (**There is no Alternative**) syndrome. A better health care to the masses can and only be provided in a progressive/socialistic state. This has been successfully exhibited by the communist China, Soviet Russia and Cuba. To-day, 11 of the 19 countries in Latin America are ruled by progressive governments- Centre-Left or Left. Therefore, celebrations and joys of downfall of socialistic system in Russia by the capitalists have been given a jolt by growing socialistis system of governance in the Latin American countries. R Arun Kumar (2012:11) aptly quotes Emir Sadar who observes in his new book *(The New Mole: Paths of the Latin American Left)* ―Revolution never repeats itself; it always appears as a heretic…It (the Mole) never returns by the way it came, but always opens up a new and different path. When it cannot be seen, it is not because; it has disappeared; it has simply become invisible. The Mole is forever digging‖.

The system of ‗Bare- foot Doctors‘ in China has covered the remotest of the remote rural and tribal areas for providing timely and cheap medical care at the door steps. Cuba has put social sector like health care and education at the top priorities and has left no stone

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unturned to give the best to its people at the most affordable price. Contrary to this, a better health care in the capitalist countries has been achieved by making health service as a money making business. So, it has given rise to a wide disparity in the practice of health care at the local and regional and social levels.

Doctors' making money attitude from unethical, corrupt, and illegal health care practices by abandoning medical ethics developed by Hypocrates asks for some better alternative in this social sector especially in India. People are not ready to compromise on this front. Nobody is allowed to play with the health and ultimately life of the masses. Pokarna (1994:18) has rightly viewed that —There is a growing consensus among the professionals, politicians and public that health is not simply a commodity to be delivered by doctors in health care institutions, but it is a value involving the entire community‖. This is also a better alternative in the given set-up.

## Notes and References:

1. 8 essentials of primary health care of Alma-Ata Declaration for achieving —Health for All by 2000‖ were:
   1. Medical Care
   2. MCH
   3. Safe Drinking Water Supply and Basic Sanitation
   4. Prevention and Control of Locally Endemic Diseases
   5. Collection and Reporting of Vital Statistics
   6. Education about Health
   7. National Health Programmes
   8. Referral Services

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# Crime against Women in Rajasthan: A Geographical Interpretation Dr. Monika Kannan*

## Abstract

The need of effective utilization of Information Technology in public safety management is increasing in the present Indian scenario of crime. Crime analysis is defined as a set of analytical processes which aims at providing timely information related to crime patterns and trend correlations to aid the administrative personnel in planning the exploitation of resources for the prevention and control of criminal activities, aiding the investigative process etc. It supports a number of police department functions in providing a best support for crime prevention and to carry out the investigations. This paper applies the utilities of GIS to identify the hotspots of crime as well as to facilitate the development of investigation preference strategy for policing. The research targets the crime prone districts of Rajasthan where condition of women is worsen. Rajasthan fares worst in women education in age group of 15-17 years, the literacy rates are low and the overall condition of women in pitiable. The study identifies the social factors affecting different types of crime in the study area. Open source software, QGIS and ARCGIS are used for crime mapping and generation of crime rates the region. Information obtained from the local *thanas* and *chowkis* have been analyzed and evaluated to establish relationship between offences and position of women in the society. The methodological framework applied in the present investigation for crime mapping can be effectively applied for development of user-interfaces platform for the development of safe city strategies.

**Key words**:  GIS, Crime Mapping, Open Source, Technology

## Introduction

Rajasthan is among the states having worst sex ratios in the country. Here, women have to collect water from uncovered wells and cook food on firewood. Besides, the desert state also has the worst percentage of girls going to school in 15-17 age- group. The women are not well employed too. The condition of women in Rajasthan is pitiable in comparison to other states. Ours is among the worst states in the country for women. Infamous for child marriages, the reproductive span of women here is second highest in the country. In Rajasthan, an analysis of the situation of women and children was made by the UNICEF in collaboration with NCERT and presented a situational analysis of the girl child. Studies have continuously pointed out the fact that all the indicators of status of women in Rajasthan - literacy, employment, sex ratio, high fertility rates, age at marriage, health and nutrition are very low. There is a vicious circle that needs to be broken. In the case of women it is also true that tackling individual indicators may not solve the problem in it entirely, as there are so many interlinkages that need to be understood before coming up with a comprehensive strategy. Crime analysis has gained current surge of interests from researchers and practitioners. Its utility in testing and informing theory and practice is greatly recognized in the field of environmental criminology (Wortley & Mazerolle, 2008). Crime analysis, however, is not a new invention (Santos, 2013)

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**Study Region**

Rajasthan (Map 1) is [India](#)'s [largest state by area ](#) (342,239 square kilometres) or 10.4% of India's total area. As per Census 2011, Rajasthan has a population of 6.86 Crores, with an increase of 5.65 Crore in 2001 census. Of which male and female are 35,550,997 and 32,997,440 respectively. In 2001, total population was 56,507,188 in which males were 29,420,011 while females were 27,087,177. The total population growth in this decade was 21.31 percent while in previous decade it was 28.33 percent. The population of Rajasthan forms 5.66 percent of India in 2011. Rajasthan is one of the states with high maternal mortality ratio (MMR). The MMR in the state is 244 deaths per one lakh live births. Assam has worst MMR at 300 deaths per one lakh live births, followed by Uttar Pradesh (285). The SRS baseline survey 2014 shows that firewood is the main fuel in Rajasthan for cooking food. Cooking food and collecting water are mainly done by women in the state.

**Map 1: Location of Rajasthan in India**



Incidence of crimes A total of 3,37,922 cases of crime against women (both under various sections of IPC and SLL) were reported in the country during the year 2014 as compared to 3,09,546 in the year 2013, thus showing an increase of 9.2% during the year 2014. These crimes have continuously increased during 2010 - 2014 with 2,13,585 cases reported in 2010, which increased to 2,28,649 cases in 2011, which further increased to 2,44,270 cases 2012 and 3,09,546 cases in 2013. In 2014, a total of 3,37,922 such cases were reported. Uttar Pradesh with 16.8% share of country's women population has reported nearly 11.4% of total crimes committed against women at all India level, by reporting 38,467 cases and West Bengal accounting for nearly 7.5% of the country's women population, has accounted for 11.3% of total cases of crimes against women in the country by reporting 38,299 cases during the year 2014. Delhi UT has reported the highest crime rate (169.1) compared to 56.3 at all India level during the year 2014, followed by Assam (123.4), Rajasthan (91.4), Tripura (88.0), West Bengal (85.4), Madhya Pradesh (79.0) and Telangana (78.3).

**Objective**

The use of Geographic Information System (GIS) for crime mapping facilitates to map, visualize,

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and analyze crime hot spots, along with other trends and patterns. It is a key component of crime analysis and the policing strategy. The present study highlights the crime stricken districts of the state. GIS uses geography and computer-generated maps as an interface for integrating and accessing massive amounts of location-based information. GIS allows police personnel to plan effectively for emergency response, determine mitigation priorities, analyse historical events, and predict future events. It can also be used to get critical information to emergency responders upon dispatch or while en route to an incident to assist in tactical planning and response. It is observed that the environment has become unsafe even for working women which also exerts a lot of anxiety and pressure of working females. Study indicates, as the female work participation rate is increasing in the state, the crime is also going up. The study utilizes the various crime records integrated with ancillary information to derive the hotspots of crime within the study area. The research was carried out with following objectives.

1) This study attempts to analyse and examine the incidences and types of crimes against women in Rajasthan.
2) The study identifies the levels of crimes and attempts to develop a framework for mapping using open GIS softwares.
3) To conduct a micro level ward wise study on Ajmer city and investigate the relationship sex ratio and rape occurrences.
4) The research investigates the percentage variation of incidences of crime against women of 2015 over 2014. It further evaluates and estimates the crime rates in the maximum crime prone districts of the state.

**Methodology**

Geographic profiling is an investigative methodology that uses the locations of a connected series of crimes to determine the most prone areas for crime. Although it is generally applied in serial murder, rape, arson, robbery, and bombing cases, geographic profiling also can be used in single crimes that involve multiple scenes or other significant geographic characteristics. Quantum GIS software is used to achieve the objectives. Brief methodology applied in the present investigation (Fig. 1.)

**Fig 1: Methodology of Crime Mapping Using GIS**

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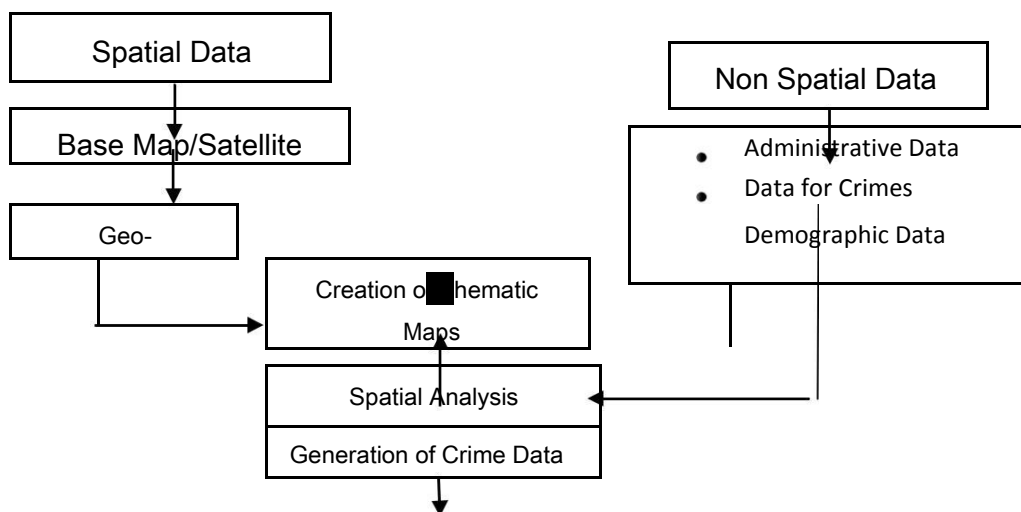
| Information to Police department |

## Result and Discussion

Uttar Pradesh has the highest reproductive span (years) which is 10 years. Following UP, Rajasthan is at the second spot with women having 9.2 years as reproductive span. The national average reproductive span is 6.6 years which is quite lesser than Rajasthan's reproductive span. This has been revealed in the recently released Sample Registration System (SRS) baseline survey 2014. The reproductive span is the duration between first marriage and menopause or sterilization. It shows that longer the reproductive span, higher the chances of getting pregnant.

Uttar Pradesh has the highest percentage (44%) of households having six or more members, followed by Rajasthan (38.8%) and Jammu and Kashmir (34%).India has 22.8% households having six or more members, according to the survey. In West Bengal, women get married at an average age of 19.3 years. In Rajasthan, the mean age of marriage of women is slightly better at 19.4 years but it is worst in comparison to other big states. The mean age of marriage in the country is 20 years. In Uttar Pradesh too, women gets married at an average age of19.4 years. Besides, Rajasthan fares worst in women education in age group of 15-17 years. Only 72.1% of girls in the age group of 15-17 years attend schools, which is worst in the country. In Gujarat, it is 73.4%, followed by Odisha (75.3%). UP is slightly better with 79.4% girls attending school in this age bracket. It has been observed that the population concentration in an area could be directly related to the crime records of the region. Thus using Quantum GIS software and Census 2011 data, a district wise crime map of the state was generated.

### Table 1: Highly Populated Districts of Rajasthan

| S. No. | Districts | Population (2011) |
|--------|-----------|-------------------|
| 1 | Jaipur | 6,66,3971 |
| 2 | Jodhpur | 3,68,5681 |
| 3 | Alwar | 3,67,1999 |
| 4 | Nagaur | 3,30,9234 |
| 5 | Udaipur | 3,06,7549 |
| 6 | Sikar | 2,67,7737 |
| 7 | Barmer | 2,60,4453 |
| 8 | Ajmer | 2,58,4913 |

*Source: Census of India*

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**Map 2:**



POPULATION IN RAJASTHAN 2011
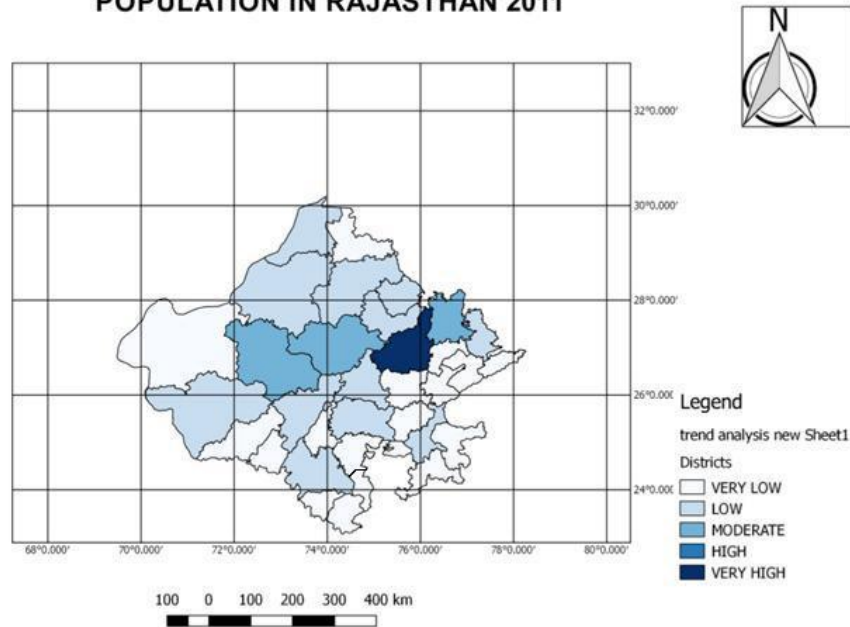
The above map clearly shows the more populated regions of the state in darker tint and the less populated in lighter. Later a crime rate was generated to analyze the crime stricken districts with number of registered cases per 1,00,000 population. Maximum crime was recorded in Jaipur, Alwar, Dausa, Ajmer, Bharatpur and Kota districts mainly. The following map gave an overall view of crime against women in the state.

**Map 3: Rate of Crime Against Women in Rajasthan**
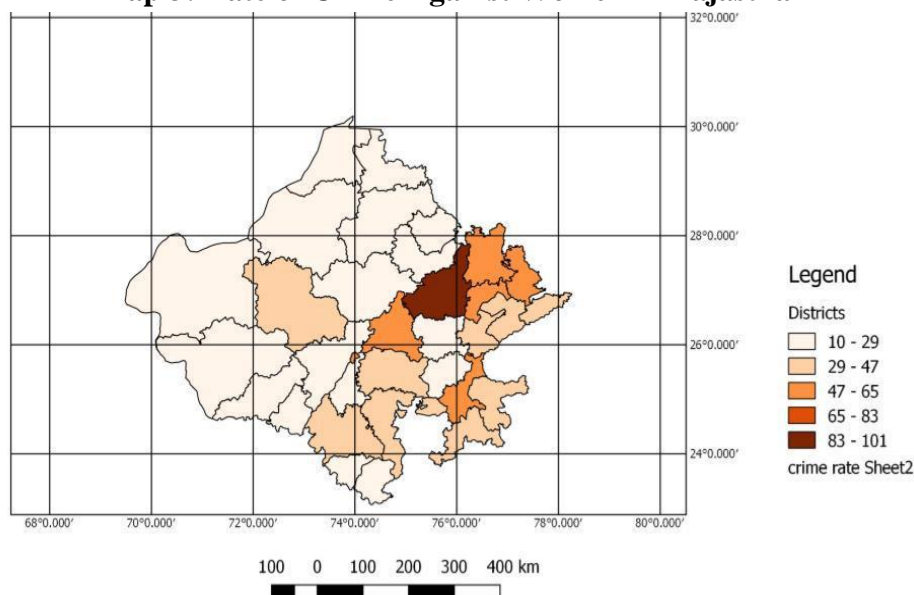


As per the police department crimes which are directed specifically against women are characterized as crime against women. The broad categories are,

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## Rape

A total of 3644 cases of rape were registered during the year 2015 as compared to 3759 cases last year showing a decrease of 3.06 percent. Alwar district registered the highest incidence of rapes (254) followed by Bharatpur(244) and Udaipur and Pratapgarh (191)each. During the process of this research, a micro level study was conducted on Ajmer city ward wise where in the sex ratio of the wards was compared with registered rape incidences was done. Using ARCGIS software, Kriging was implied to examine the relationship between the above mentioned two variables. The results are shown in the Map 6 below, where the darker shades emphasize that there exist a strong connection between the two in ward 3 and 4 of the city.

**Map 4: Rape Incidences in Rajasthan 20 15**
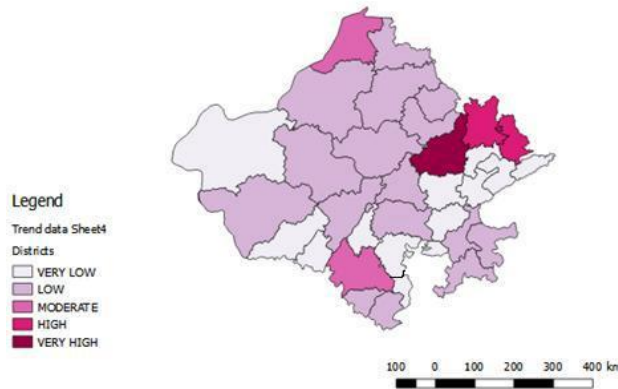


**Map 5**

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## Dowry Death

A total of 463 cases of dowry death were registered during the year 2015 as compared to 408 cases last year showing an increase of 13.48 percent. Alwar district registered the highest incidence (44) followed by Barmer (39) and Bharatpur (31).

## Assault of Modesty of a Female

A total of 4813 cases of molestation and assault were registered during the year 2015 as compared to 5999 cases last year showing a decrease of 19.77 percent. Udaipur district registered the highest incidence of (344) followed by Barmer (268) and Jhalawar(266).

## Domestic Violence

It includes cruelty by husband and relatives. A total of 14383 cases were registered during the year 2015 as compared to 15905 cases last year showing a decrease of 9.57 percent. Sri Ganganagar district registered the highest incidence of (812) followed by Ajmer(792) and Alwar(717).

**MAP 6:**

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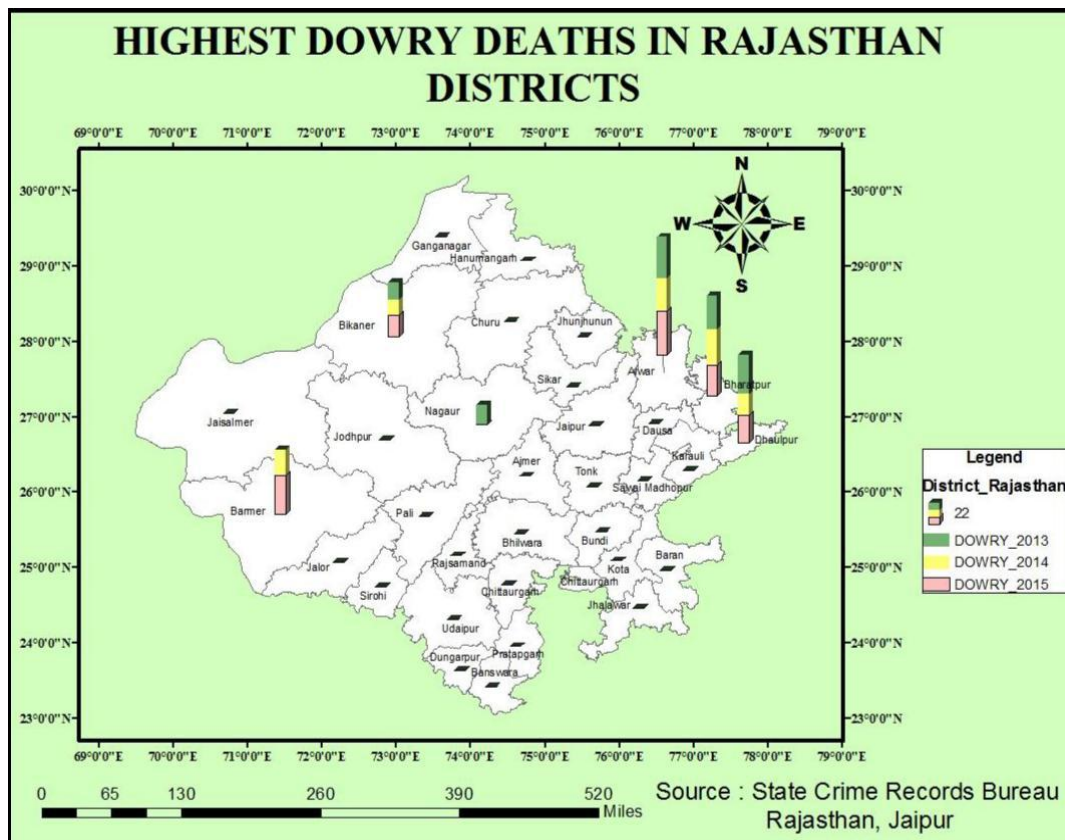
### Table 2 : Incidence of Crime against Women in Rajasthan, 2010 - 2015

| S No. | Types of Crime | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | % Variation 2014 to 2015 |
|---|---|---|---|---|---|---|---|---|
| 1 | Rape | 1571 | 1800 | 2049 | 3285 | 3759 | 3644 | -3.06 |
| 2 | Dowry Death | 463 | 514 | 478 | 453 | 408 | 463 | 13.48 |
| 3 | Molestation | 2339 | 2447 | 2352 | 4829 | 5999 | 4813 | - 19.77 |
| 4 | Domestic Violence | 11145 | 12218 | 13312 | 15094 | 15905 | 14383 | -9.57 |
| 5 | Kidnapping Abduction | 2477 | 2713 | 2697 | 4047 | 4421 | 4167 | -5.75 |
| 6 | Immoral Trafficking | 82 | 81 | 99 | 74 | 78 | 86 | 10.26 |

*Source: Rajasthan Police*

**Kidnapping and Abduction**

Under this head with 4167 cases registered during the year 2015 as compared to 4421 cases last year showing a decrease of 5.75 percent. Udaipur district registered the highest incidence of (234) followed by Alwar(224) and Bhilwara(212).
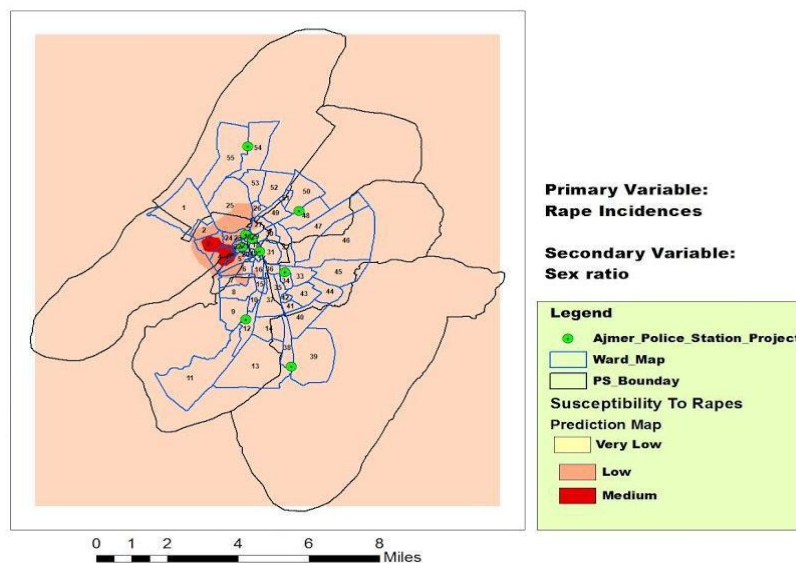
**Immoral Trafficking**

An increase of 10.26 percent has been recorded in cases under it during 2015 with 86 registered cases. The highest number of 12 cases were registered in Jaipur followed by Udaipur and Jodhpur (8) cases each.

The study indicates an urgent need for reinforcing strong steps towards women safety in the state. The research highlights that districts like Jaipur, Kota and Alwar are registering more offences against women because of various reasons like the corporate culture, labour commuting here for work, more women work participation (leading to late working hours), influx of student community for education and job opportunities to this area and also because of immigrant population from Bangladesh etc. The police force needs to be more vigilant and also sensitized woman related issues.

## Map 7: Types of Crimes against Women in Rajasthan, 2015



**DOWRY DEATHS**
**RAPES**
**DOMESTIC VIOLENCE**
**KIDNAPPING AND ABDUCTION**
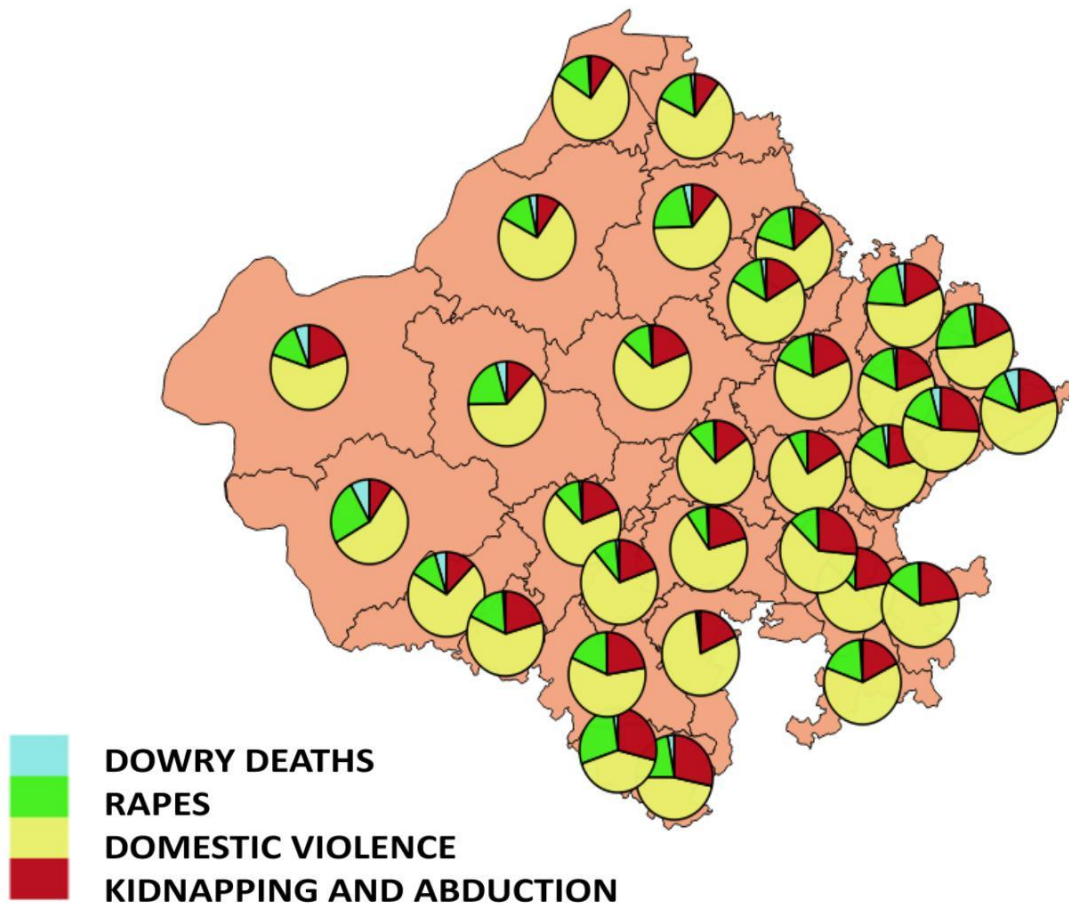
The state government has adopted the gender sensitization module recommended by the National Commission for Women. The Commission has recommended the involvement of women's groups and the academia for such trainings.

The Growing Trafficking on National and State Highways indicates that there have been several reports in the press as well as from women's groups about the growing number of motels on

the highways that are becoming dens for flesh trade. But the State government is not willing to believe because there are hardly any complaints. There are no Rescue Officers. The Commission advised the State Government to have a well defined policy of transfers and postings in trafficking-prone areas. It should also be ensured that flesh trade is not taking place in the garb of the *Nata System*. Further, social reform programme should be started by the government for working among

those communities which force their unmarried daughters to go for prostitution. The police should stop looking at every woman from these communities as prostitutes and harass them.

Figure 2 showcases the different types of crimes that have been registered against women in just two months January and February 2018. During the course of research it was revealed that 50-60% cases of crimes against women the police does not get enough evidence to *challan* the cases or comes under pressure of powerful people. Dowry deaths, abetting a dowry suicide and rape, as per the police investigations, are registered falsely. The police, on the other hand is quick to register minor cases like eve teasing, molestation and others.

**Fig. 2 Crime against Women in Rajasthan**
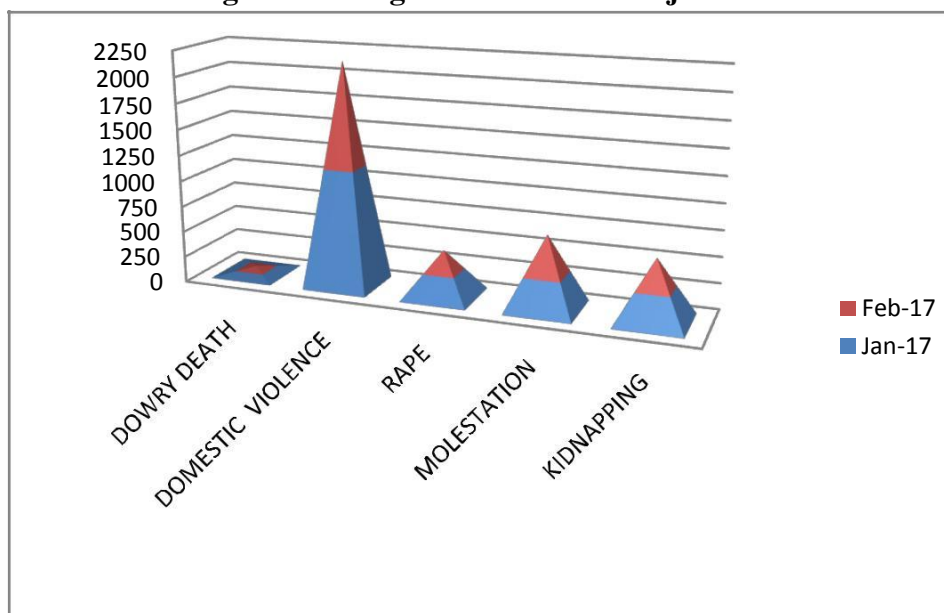


*Source: Rajasthan Police*

The above figure presents a very saddened aspect of condition of present women in the state. Women, once worshiped as *Durga*, the Goddess of power, *Laxmi*, the Goddess of prosperity, *Saraswati*, the Goddess of knowledge and many more is chained and suffering today.

**Conclusion**

In the last decade of the last century a number of initiatives in the field of education have been taken up in Rajasthan that have shown remarkable results in the upliftment of women in the state. Programmes like the ICDS have been spread to all the districts of the state and the adolescent girl child has been taken up into special focus. Efforts have been made to bring down the population growth rate too. For the first time in almost a decade, crimes in the state came down by 5.86% in 2015. On the basis of the cases reported related to the major crimes and under the local and special acts, it is noticed that there is an overall decrease in the number of cases registered in 2016 stands at 4.21%.

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Considering dowry demand as a major cause of domestic violence in Rajasthan, the National Commission has advised the state for the appointment of full time Dowry Prohibition Officers and use the Anganwari workers and saathins for anti-dowry campaigns. As the Dowry Prohibition Act has not been implemented in right earnest, the District Social Welfare Officers have been notified as Dowry Prohibition Officers but cases are being registered under 498A and not under the Act. The State should also give wide publicity to Sec 3 of the Act which requires preparation of list of the gifts given at a marriage. Marriage Registration Act It is important to implement the Act, especially because it may curb the practice of child marriages in Rajasthan. It is also necessary to verify the ages of all the couples in a mass marriage ceremony.

The National Commission for Women recently proposed the sanctioning of number of Mahila Thanas in the state from the present twelve. The National Commission has also suggested

that instead of opening more Mahila Thanas, it would be better if there was a woman's desk manned

by a woman police officer in every police station. The Commission has also recommended that NGOs should be involved in the sexual harassment committees in every police station.

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Regional Dimension of Performance of Agriculture:
An Analytical Study of Uttar Pradesh

**Abhishek Prakash[1] &Rakesh Raman[2]**

## Introduction

As the Indian economy look forward to emerge as an economic super- power in the new millennium, it finds itself confronted with decaying and crumbling agriculture, stunting rural non-farm sector and creeping manufacturing. The growth rate of agriculture has slowed down and volatility has risen (Sen 2016). Neo-liberal policy has caused withdrawal of government support to agriculture, exposed farmers to the vagaries of market and the policy of international price deflation in agriculture has resulted in pauperisation of farmers. The dire state of agriculture has put tremendous economic pressure on the people who reside in countryside and are dependent on agriculture for their livelihood. The phenomenon is though pervasively widespread and broadly associated with the majority of the rural population, the dimensionality of this problem i.e. magnitude, intensity, underlying causes and its nature varies significantly across states and across regions of bigger states like Uttar Pradesh, Maharashtra etc. Any effort to handle the problem of agriculture is going to flop unless we understand these variations and causes thereof and then adopt strategy apropos in relation to specific region of the country. It is precisely that the present paper does. It attempts to capture regional dimension of status of agriculture in India's largest state Uttar Pradesh and then attempts to identify the factors that have led to the variation therein.

Uttar Pradesh, the largest state of India in terms of population remains a backward state, dependent on agriculture. Stagnation of the productivity, deceleration in growth of production and more importantly, rising risk and uncertainty has been main characteristics of the agriculture sector since 1991. For more than 80% of the farmers belonging to marginal and small category agricultural activity has become unviable as the gap between return to cultivation and the cost of the production has become narrow or negative. Although the situation of agriculture in the entire state is unsatisfactory, there exist wide variations in status of agriculture across the state. The Western UP that is close to the agriculturally developed states like Punjab and Haryana is advanced in terms of infrastructure has had spill over effects of green revolution and is the political hotbeds of the state. Agriculture here is in advanced stage. Bundelkhand region is very backward, with adverse climatic condition, less fertile soil and age long neglect by the policy makers. Similarly the Eastern region though has the most

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fertile landscape in the country, has uneconomic size of landholding, insufficient infrastructure including marketing network and tremendous pressure on land. The existences of huge intra state variations in the status or performance of agriculture creates two serious problems- <u>First</u>, it forces us to give importance to regions where performance of the agriculture or condition of farmers is worse, thereby, neglecting other regions where the problem is in early stage and a timely intervention at this stage could have reversed the trend. . <u>Second</u>, it makes policy formulation difficult as the same policy cannot be adopted everywhere. It therefore requires region specific policy formulation something that the government struggles with. Several attempts have been made to analyse the causes of inter and intra state variations in India and its states (Raman and Reena 2012, Khursheed 2017, Revathi and Galab 2010, Mohanty 2009). Even a cursory look would make one aware that there are two kinds of explanations – a) There exists a line of argument normally toeing the leftist line that claims that the **historical and geographical factors** that have evolved over a period of time and have been given a boost by the pro-capitalist development policy followed by those at the helm that precisely explain the variations in status of agriculture across the state. The historical process of evolution has led to evolution of division of labour and shaped the way resources and infrastructure are being utilised in a region thereby deciding the fate of agriculture b) The second line of thought gives credence to the **policy factors** which reflect the overall approach of the policy makers towards agriculture as reflected by the infrastructure created for evolution and growth of agriculture. The approach attempts not on the particular path of evolution of agriculture (capitalist or feudal) Rāther the relative importance given to agriculture. It claims that over a period of time agriculture has lost prominence and has been neglected resulting in its decay.

Balanced agricultural development requires identification of causes of low performance of agriculture. This is what the present paper does. It does this it in two ways – 1) Computing index of production and productivity for different regions and districts of UP in order to understand the degree of disparity in performance of agriculture here. 2) Understanding the relationship between performance of agriculture as reflected by production and productivity index by relating it to historical & geographical factors and policy factors. The paper precisely attempts to look over variations in agricultural attainment and performance via historical, geographical and policy factors. For this reason the present paper is divided into four sections. Section-I deals with conceptual framework and methodological aspect. This section gives the rationale behind the taking three aspects mentioned above to look into the variation of agricultural performance. Section-II comes with composite index of performance of agriculture and related factors. Section-III attempts to analyse region wise analysis of the variations at different levels and Section-IV comes up with conclusion and policy suggestion.

## <u>Section – I</u>   <u>Conceptual Framework and Methodological Aspect</u>

There is plethora of literature which indicates variations in the performance of agriculture and its impact on farming community. There are two diametrically opposite views which explain the variations in performance of agriculture across regions-

▪
The first view comes from leftist thinkers who hammer over the pace of transition from feudal to capital and how this course of transition bring changes in labour and peasant exploitation, usurious capital, share cropping, commercialisation etc. (Utsa 1971a, 1971b, 1971c, Bhaduri 1973, Prasad 1984). Even among the leftist, two distinct approaches looking at the evolutionary process is clearly discernible. First, the orthodox Marxist guided by the theory of internal causation and second, those who put greater emphasis on factors external to the system. Indian case is different from the countries where these theories evolved. Hereunder in the transition phase, simultaneously internal and external factors (e.g. implementation of green revolution and adoption of neo-liberal policy) both worked and have impact on the historical and geographical factors. Gradually, these historical and geographical factors over a period generated regional differences depending on the pace of transition. These factors shaped the evolution of agrarian economies in a way that in some regions of the country capitalist production relation has evolved while in others production relations has remained feudal. In regions where production relations is capitalist capital intensive production technique is used and there is high demand for resources like fertiliser, pesticide, electricity for irrigation, agricultural credit etc. Both the sections howeve agree that the historical and geographical factors over a period generate regional differences depending on the pace of transition

Geographical factors and proximity with neighbouring states also play a major role. If a particular region is located adjacent to regions which are agriculturally developed it will have spill over effect. For example the regions of UP draws different features from their adjacent states such as the Western region of UP is close to the states like Haryana, Punjab and Delhi which are the first gainer of green revolution. Due to this, the region has great commercialisation and heavy mechanisation in agriculture.Larche (1988) has also mentioned that in colonial period the Western region benefited the most and attractedbulk of the government investment. Omvedt (1987) asserts that the Western part was the most prosperous in overall UP in green revolution the whole production process got momentum and majority of the farmers predominantly shifted their land allocation over sugarcane. Rao (1976) also indicated that in west UP land-worker ratios and wages were high and had a better resource position, irrigation and cropping intensities.Contrary to this, the Eastern region of UP has been under the impact of agriculturally backward states like Madhya Pradesh, Chattisgarh, Bihar. This region is labour abundant and capital scarce and since independence has been under the influence of zamindari system which have fettered the

agricultural development. While Eastern region of UP has been characterised by land scarce, capital scarce and labour abundant region.

■

The second view is that of the main stream thinkers who give credit to inequality in resource endowment, technological spread, institutional support differences, product market imperfections and unequal policy support (Deshpande and Arora 2010, Revathi and Galab 2010, Ramasamy and Kumar 2011, Bhalla and Singh 1997). The main stream scholars give importance to the policy factors in shaping agricultural attainment. The policy factors via public investment in infrastructural facility, subsidy, MSP and through other interventions affect the status of agriculture. Even the leftist scholars believe that adoption of Neo-liberal Policy and ambiguous path of capitalist development have resulted in fall in public sector investment in agriculture thereby worsening of rural infrastructure, fall in subsidy given by government, withdrawal of public sector lending institutions from agricultural finance. This diversion in policy paradigm has squeezed farm income and intensified the regional disparity. This was the main cause as we can see that in post liberalisation phase the scholars have great emphasis under policy suggestion on reducing regional disparity and pumping money through public investment in infrastructure. Deshpande (2002) suggested that by removing market imperfections, revamping market discipline and providing proper infrastructure can give a big push to agriculture. Similarly, Sidhu (2002) suggested that the state should strengthen rural infrastructure and improve the standard of rural education.

A cursory look at the debate relating to existence of regional variation in performance and status of agriculture reveals that there are broadly two set of factors that can be held responsible for existence of regional differences in agricultural attainment. The first one, of course is historical process of evolution and the geographical factors while the second is policy actor that is reflected in existence of infrastructural facility. The chart given below summarises the discussion-

First category is historical and geographical factors and second is policy factor. The historical and geographical part captures utilisation of resources and demographical differences, while policy factors capture availability of the resources for farmers. This reflects effort or allocation of investment of the state for agriculture in a specific region.

**Chart-1**



**Factors Explaining Regional Dimensions of Agricultural Performance**

Regional Dimension of Agricultural

Historical and Geographical Factors

Policy Factors

Exploitation of the Resources Available (Utilisation)

Demographic Elements of the Region

Agricultural Facility (Availability)

Agricultural Production and Productivity/ Performance of Agriculture

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### Methodology & Data Base:

To capture the above dimensions we are using several variables the description of which is given in Table – 1. These variables are categorised in broad heads (i.e. agricultural infrastructure, use of agricultural facilities, demographic element and agricultural performance) and have been used to compute district and region wise indices.Data has been collected from Economics &Statistics Division, Planning Department Government of UP.

We have normalised the values using the formula

$$NormalisedValue = \frac{X_{i(Best)} - X_{i(Observed)}}{X_{i(Best)} - X_{i(worst)}}$$

In this process for the variables that are positively associated with the index (e.g. number of cold storages per thousand square kmsas positive with infrastructure) the highest value of the variable are taken as best and the lowest value as worst. Similarly, for the variables which are negatively associated with the index, the lowest value is taken as best and highest value as worst.After normalising we have run the principal component analysis (PCA) for indexing.

After this, we have defined five categories (i.e. very high, high, moderate, low, and very low) indicating the range of particular index. For making these categories, we have taken sum of highest and lowest values and divided it by five to find the conversion factor. After this we have takenthe average of the index and by adding and subtractingthe conversion factor have obtained theclasses respectively. After making five categories, districts are categorised under these five categories according to their values. For better analysis and clarity of picture we have run the ANOVA (analysis of variance) test to look whether the differences are significant or not. At the level of region we have taken simple average of index values of the districts and cross tabbed regions with infrastructural facilities, utilisation of resource, demographic profile and performance of the region.

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**Table – 1:Indicators Showing Regional Dimension of Agriculture in Uttar Pradesh**

| 1. | **Agricultural Infrastructure(Availability)** | 2. | **Use of Agricultural Facilities (Utilisation)** |
|---|---|---|---|
| a) | No.of agri.production societies per lakh hects. of net area sown | a) | % of loan distributed in agri. and related works in total loan distributed in private sector |
| b) | Number of cold storages per thousand square kms | b) | Loan distribution of primary field per person |
| c) | Primary agri. loan cooperative societies per lakh population | c) | Per head electricity consumption in rural area (kilowatt hours) |
| d) | Number of bhoomivikas banks per lakh population | d) | % of electricity consumed in agriculture division in total electricity consumption |
| e) | No. of agri. sales purchase cooperative societies per lakh population | e) | Percentage of net irrigated area to net area sown |
| f) | % of electrified villages in total inhabited villages | f) | Fertilizers consumed by per hectare of gross area sown (kg) |
| g) | Length of total pakki roads per lacs population (Km.) | | |
| 3. | **Demographic Elements of Region** | 4. | **Performance of Agriculture** |
| a) | % of Rural population in total population(2011) | a) | Gross val. of agri. products (Rs.) on net area sown per hectare |
| b) | Literacy rate (2011) | b) | Cost of production |
| c) | Average length of rural family (2011) | c) | Percentage of net area sown in total area |
| d) | % of cultivator in total main worker (2011) | d) | Crop density |
| e) | % of Agri. labour in total main worker(2011) | e) | Per head production(kg) Grains |

**Section – II  Regional Variation in Agriculture in Uttar Pradesh**

The status of agriculture varies significantly across regions and districts. The available agricultural infrastructural facility, exploitation of the resources, demographic elements of the region acts as a key player in determining these variations. The level of infrastructural facility reflects the level of public investment or governmental effort to promote agriculture. Beside

this, the exploitation of the resources available for farmers indicates the level of awareness, level of information, volition to invest, use of input, cropping intensity etc. Inter alia, the demographic elements reflect agrarian structure which is crucial aspect of a region. Taking together all thesein consideration will provide a panoramic view of a region.

A. **Policy Factor- Agricultural Infrastructural Facility in UP:**The availability of the facility is a precondition and vital for agricultural development and unfortunately the situation is not that well overall in UP. From Table-2 it could be seen that most of the districts (51% of total) fall into the category of low level of infrastructure. Taking low and very low category this proportion rises remarkably high to 60%. This gives clear indication that UP has to work more on the front of infrastructure for rejuvenation of agriculture.

**Table -2:Ranking of District on the basis of Agricultural Infrastructural Facility**

| Composite Index | Regions | Districts |
|---|---|---|
| High (0.517—0.307) | West. =6(20%), Cent. = 1(10%)Bundel. = 2(28.5%), East. = 0 | Jalaun, Mahoba, Farrukhabad, Kannauj, Mahamaya Nagar, Agra, Firozabad, GautumBudh Nagar, Kanpur Dehat |
| Moderate (0.306—0.212) | West. =12(40%), Cent. = 2(20%)Bundel. = 3(42.9%), East. = 4(14.3%) | Lalitpur, Hapur, Raebareli, Budaun, Ballia, Aligarh, Kaushambi, Baghpat, Meerut, Kanpur Nagar, Deoria, Etah,Mathura, Hamirpur, Mainpuri, Mau, Ghaziabad, Etawah, Auraiya, Shamli, Jhansi |
| Low (0.211—0.116) | West. =11(36.7%), Cent. = 5(50%) Bundel. = 2(28.5%), East. = 20 | Ambedkar Nagar, SantKabir Nagar, Bijnour, Pilibhit,Moradabad, Chitrakoot, Balrampur, Lucknow, Sitapur, Jaunpur, Varanasi, Gonda, Pratapgarh, Chandauli, Shahjahanpur, Ghazipur, Gorakhpur, Mirzapur, Maharajganj, Amethi, Hardoi, Faizabad, Barely, Sonebhadra, Fatehpur, Kanshiram Nagar, JyotibaPhule Nagar, Allahabad, Saharanpur, Rampur, Kushinagar, Sambhal, Behraich, Azamgarh, Siddarth Nagar, BulandShahar, LakhimpurKheri, Banda |
| Very Low (0.115 or below) | West. =1(3.33%), Cent. = 2(20%)Bundel. =0, East. =4(14.3%) | Basti, Sultanpur, Saravasti, SantRavidas Nagar, Unnao, Barabanki, Muzaffar Nagar |

Source: Computed by the Present Authors,

(Figures in Parenthesis show the percentage of total districts in the region)

There exists wide inter-regional variation in agricultural infrastructural facilities in UP with Western UP having better resource position and factor endowment (Rao 1976, Lerche 1998, Friese 1990) while Eastern UP lagging far behind. This reflects that the public

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investment in agriculture is pro-Western region. The Western region has been the political epicentre of UP and this has resulted in concentration of investment in its favour. With clubbing high and moderate level of facility 60 % of the districts of Western region fall into good infrastructural facility. Contrary to this, in Eastern region condition is worst as farmers of this region do not have good infrastructural facility. As indicated in Table −2 only 4 district fall into the moderate category while 24 districts are under low and very low category. Making a comparison between Eastern and Western region becomes prominent because both the regions comprises large number of districts and represents around 78 % of UP. The central and Bundelkhand regions together have 17 districts out of which around half of the districts fall into the category of low facility. Unlike the East UP, the Central and Bundelkhand regions have relatively better infrastructural facility.

**B.** **Historical & Geographical Factors-** Mere availability of infrastructure is not sufficient to sustain high performance of agriculture, demographic factors conducive to their utilisation and land size, farmers' resource base, possibility to extract surplus etc. play a crucial role in determining the extent to which the existing facilities are exploited. We discuss these here in brief-

**B.1.Utilisationof Agricultural Facilities:**

The utilisation of the resources reflects the extent to which farmers are able to exploit the available facilities thereby ensuring better performance of agriculture. Table-3 indicates that the districts of Western region are exploiting the available resources well. Taking very high, high, and moderate together it is clear that the 80 % of the districts of the Western region aremaking good use of the resources. This indicates that the farmers in this region are advanced and having good interest in agricultural activity. In this region farmers are using capital intensive technique and cropping pattern is highly commercialised. Thus, the consumption of fertiliser, use of agricultural credit, investment in agricultural equipment are high.Another aspect of this high utilisation of the resources is that the farmers of this region have high aspiration of profit and ready to invest in agriculture.

The Eastern part of the region is agriculturally backward in terms of availability and utilisation of the resources as compared to the Western region. However, the noticeable thing is that while in availability of resources only 4 districts of the Eastern region are in moderate level but in utilisation of the resources 11 districts are performing better. In fact some districts like Basti, Gazipur, SantRavidas Nagar, Allahabad, Amethi, Ambedkar Nagar, Varanasi, and Faizabad are having low resources but exploiting the resources remarkably well.

Contrary to this, Bundelkhand is performing poorly in utilisation of resources. This region has good availability of resources but is worst exploiter of the resources. A staggering 85.7% of the districts in Bundelkhand region is in the category of very low exploitation of

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facilities.The rainfall in Bundelkhand region is sparse and has declined over a period of time. The land rights are not very clear. Land shown in records to be in the possession of weaker sections, or as part of the village commons, has been encroached upon by big landowners. There are several allottees who do not know exactly which plot of land has been allotted to them. They cultivate a plot only to be told later that it is not their land. Moreover, farmers of this region face very high risk/uncertainty and many of them lack resources to do more than on crop in a year (for lack of resources). This is a critical component that is responsible for increasing vulnerability of the small and marginal farmers and discouraging them from utilising infrastructural facilities. Over all agricultural sector in Bundelkhand region has become risky and vulnerable and farmers in this region lack incentive to invest in land.

**Table – 3: Ranking of District on the basis of Exploitation of the Facilities Available**

| Composite Index | Regions | Districts |
|---|---|---|
| **Very high (0.637 or above)** | **West. =3 (10%), Cent. = 0 Bundel. = 0, East. = 0** | **Mahamaya Nagar, Baghpat, Shamli** |
| **High (0.636-535)** | **West. =8(26.7%) Cent. = 0 Bundel. = 0, East. = 0** | **Kanshiram Nagar, Muzaffar Nagar, Farrukhabad, Hapur, Meerut, Sambhal, Ghaziabad, GautumBudh Nagar** |
| **Moderate (0.534—432)** | **West. =13 (43.3%), Cent. = 6 (60%) Bundel. = 0, East. = 11(39.3%)** | **Basti, Firozabad, Raebareli, LakhimpurKheri, Kaushambi, Ghazipur, Budaun, Agra, Etah, Mathura, BulandShahar, Kannauj, SantRavidas Nagar, Mau, Sitapur, Kanpur Dehat, Kanpur Nagar, Deoria, Mainpuri, Allahabad, Pilibhit, Saharanpur, Amethi, Moradabad, Ambedkar Nagar, Bijnour, Lucknow, Varanasi, Faizabad,JyotibaPhule Nagar** |
| **Low (0.431-0.328)** | **West. = 6(20%), Cent. = 4(40%) Bundel. = 1(14.3%), East. = 11(39.3)** | **Jaunpur, Auraiya, Unnao, Azamgarh, Kushinagar, Ballia, SantKabir Nagar, Gonda, Hardoi, Chandauli, Sultanpur, Fatehpur, Maharajganj, Etawah, Pratapgarh, Gorakhpur, Barabanki, Rampur, Shahjahanpur, Barely, Aligarh, Lalitpur** |
| **Very Low (0.327 or below)** | **West. =0, Cent. = 0, Bundel. = 6(85.7%), East. = 6 (21.4%)** | Sonebhadra, Chitrakoot, Mahoba, Hamirpur, Behraich, Banda, Jhansi, Mirzapur, Balrampur, Saravasti, Jalaun, Siddarth Nagar |

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Computed by the Present Authors, (Figures in Parenthesis show the percentage of total districts in the region)


**B.2.Status of Agriculture District-Wise Analysis:**

The variation in the performance of agriculture corresponds with infrastructural facilities, utilisation of the resource and demographic profile of the district. For better analysis and clarity of picture we have clubbed all five categories into two broad categories. **First category** consists of very high, high and moderate districts and under **second category** low and very low index districts. Let us first come to the districts of the Western region, which is agriculturally very rich region of the state. Looking over the performance of agriculture (Table – 4) it is clearly noticeable that more than 70% of the districts of Western UP are under first category (i.e. high and moderate performance). This reflects that the performance of agriculture is good in that region which has good infrastructural facility and high exploitation of resources available to them.

Taking districts of Eastern regions it is seen that about 57% of the districts of the region fall under low or very low performance category. None of the districts of the region fall in very high or high performance segment. This gives an indication that though the Easternregion because of very fertile land has great potential of agricultural performance yet the lack of adequate infrastructural facility and resource availability bottlenecks have fettered the growth of agriculture in this region. The situation of the Bundelkhand region in terms of agricultural performance is the worst. Only one district of the region is in the moderate performance zone while remaining is either in low or very low performing zone. There are a number of factors responsible for poor performance of agriculture in Bundelkhand (Khan & Raman, 2014). Agriculture in the region is heavily dependent on rainfall which has beenunpredictable. The shift to new agriculturaltechnique that is very water intensive has resulted in serious irrigation problem in the region. A depleted groundwater table and the high costs associatedwith building and operating irrigation infrastructure are putting the region in deep trouble. Further, the harsh and worsening biophysical conditions such as low soil fertility, combined with more frequentextreme events such as droughts caused by climate variability and change intensifies Bundelkhandregion's vulnerability. Moreover, the condition of the farmersin the region is very bad; they are in debt which is mounting. They neither have the resources not adequategovernmental assistance to take up the agricultural work well. Low resources here have forced farmers to go forsolo cropping and cultivate only around 20% of the net shown area in the Kharif season. About 60% of the grosscropped area remains irrigation less. Thus poor economiccondition of farmers, high cost of cultivation and frequent crop-failure due to insufficient irrigation facilitieshave forced farmers in the region into a debt-tra

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**Table-4: Ranking of District on the basis of Performance of Agriculture**

| Composite Index | Regions | Districts |
|---|---|---|
| Very High (0.746 or above) | West. =1(3.3%), Cent., Bundel&East. = 0 | Baghpat |
| High (0.647— 0.745) | West. =11(36.6%), Cent. = 1(10%), Bundel. = 0, East. = 0 | Barabanki, Budaun, BulandShahar, Etah, Aligarh, Mahamaya Nagar, Shahjahanpur, Auraiya, Rampur Kanshiram Nagar, Sambhal, Mainpuri |
| Moderate (0.646— 0.548) | West. =10(33.3%), Cent. = 2(20%)Bundel. = 1(14.3%), East. = 12(42.9%) | Saravasti, Ghazipur, Azamgarh, Amethi, Gonda, Unnao, Chandauli, Hardoi, Hapur, Mau, Barely, JyotibaPhule Nagar, Deoria, Shamli, Kannauj, Firozabad, Ambedkar Nagar, Moradabad, SantKabir Nagar, Mathura, Siddarth Nagar, Etawah, Maharajganj, Lalitpur, Pilibhit |
| Low (0.547— 0.448) | West. =5(16.7%), Cent. = 5(50%), Bundel. = 5(71.4%), East. = 12(42.9%) | Pratapgarh, SantRavidas Nagar, Varanasi, Meerut, LakhimpurKheri, Mahoba, Agra, Hamirpur, Behraich, Muzaffar Nagar, Farrukhabad, Kaushambi, Balrampur, Saharanpur, Raebareli, Gorakhpur, Jalaun, Sultanpur, Banda, Basti, Jhansi, Fatehpur, Faizabad, Kushinagar, Sitapur, Jaunpur, Kanpur Dehat |
| Very Low (0.447— below) | West. =3(10%),Cent. = 2(20%), Bundel. = 1(14.3%), East. = (14.3%) | Sonebhadra, Mirzapur, Chitrakoot, Lucknow, Kanpur Nagar, Ballia, Ghaziabad, Allahabad, GautumBudh Nagar, Bijnour |

Computed by the Present Authors, Figures in Parenthesis show the percentage of total districts in the region

**Section – III Analysing Regional Dimensions of Agricultural Performance**

 Computation of separate indices we can now proceed to find and analyse the relationship between agricultural performance in different regions and the two factors identified i.e. historical and geographical factors and policy emphasis. For a better insight and aggregate picture, we have cross tabbed agricultural production and productivity with historical and geographical factors (i.e. utilisation of facility and demographic features) and infrastructural facility in Table-5 given below.

### Table –5: Cluster of Districts

| Factors | | Agricultural Production and Productivity | | | | |
|---|---|---|---|---|---|---|
| | | Very High | High | Moderate | Low | Very Low |
| **Historical & Geographical Index** | Very High | 1 | 2 | - | - | 1 |
| | High | - | 1 | 4 | 4 | |
| | Moderate | - | 1 | 7 | 7 | 5 |
| | Low | 1 | 5 | 9 | 9 | 1 |
| | Very Low | - | 3 | 2 | 6 | 2 |
| | | | | | | |
| **Infrastructural Index** | Very High | - | - | - | - | - |
| | High | - | 1 | 2 | 5 | 1 |
| | Moderate | 1 | 5 | 8 | 5 | 3 |
| | Low | - | 5 | 14 | 13 | 6 |
| | Very Low | - | 1 | 1 | 4 | - |

Computed by the Present Authors

Table-5 reflects positive relationship of agricultural performance with historical & geographical factors and infrastructural facilities. If we take agricultural facility moderate and below moderate and same category from historical and geographical, we found 48 districts fall into this category which consist of 69% of the total districts. In the same category, considering agricultural production and productivity with infrastructural facility, we get 52 districts (70% of total districts) have positive relation.

However this positive relation is not very strong and clear. There are some contradictions, as some districts are having good infrastructural facilities and historical and geographical factors but performing outrageously (especially those in Bundelkhand region), while some districts have poor facilities but are performing better. There are several reasons behind this

a. It is due to the impulsive government policy. Governments normally go for short term measures and pump money at a time when crisis like situation emerges, but do not adopt long term and sustainable measures to handle problems faced by agriculture. In regions like Bundelkhand when crisis like situation emerged government allocated huge amount of money in infrastructural facility. Thus, allocation of public investment without taking

historical and geographical factors into consideration will not help in resurrection of agriculture. It will create huge regional differences.

b. The poor institutional linkages have reduced farm level investment of farmers in Eastern region. This region has great potential but potholes of parallel support systems have fettered the performance of agriculture.

c. The low level of alternative job opportunities in Eastern region has also created pressure on agrarian economy.

## Region-wise Dimensions

In the above section we have given district wise scenario of variation, inter alia region wise picture will elaborate the condition panoramically. Growing imbalances in agricultural growth and development lead to huge disparity in the status of farmers living in different regions and hence has wide social repercussions.

### Table-6 : Regional Indices: A Summary Picture

| Regions | Performance of Agriculture Index | Infrastructure Index | Facility Exploitation Index | Demographic Profile Index |
|---|---|---|---|---|
| Western | 0.598 | 0.250 | 0.503 | 0.711 |
| Central | 0.519 | 0.200 | 0.439 | 0.748 |
| Eastern | 0.514 | 0.161 | 0.393 | 0.531 |
| Bundelkhand | 0.503 | 0.256 | 0.260 | 0.713 |

Computed by the Present Authors

Table- 6 presented above gives panoramic viewof the regions of the Uttar Pradesh. We have first done analysis of variance to find whether the regions differ significantly in terms of different indices or not. Table-7 clearly shows that there are significant variations among the regions over infrastructural facilities, utilisation of resource and performance of agriculture.

### Table-7: ANOVA Result

| | | Sum of Squares | Sig. |
|---|---|---|---|
| **Infrastructure** | Between Groups | 0.130 | .001 |
| | Within Groups | 0.508 | |
| | Total | 0.638 | |
| **Use of Resources** | Between Groups | 0.131 | .001 |
| | Within Groups | 0.504 | |
| | Total | 0.635 | |
| **Performance of Agriculture** | Between Groups | 0.401 | .000 |
| | Within Groups | 0.486 | |
| | Total | 0.887 | |

Computed by the Present Authors

Turning our attention back to Table-6 we notice that the Western region is performing well in agricultural performance which means the status of agriculture in the Western region is quiet good compared to the other regions of the state. In terms of infrastructural and facility exploitation indices too the Western UP stands first.Theregion has attracted resources from both the Centre and the state and has been a major gainer of green revolution compared to other regions of UP. The main crops of the Western region are wheat and rice among the food grains and sugarcane and oilseeds among commercial crops. Due to the impact of commercialisation in this region, both private investment and public investment in this region are high. The close proximity with urban centres fosters the growth of agriculture to a great extent in this region.

Contrary to this, the Eastern region of the state is lagging behind all regions in infrastructure and demographic profile. It is the most deficient in terms of infrastructure something that has been responsible for relatively poor performance of the region.Poor quality of manpower and over dependence of population on agriculture have further been responsible for a depressing value for its demographic profile index and have together worked against the interest of the agricultural sector.The position of Eastern region clearly shows that by making higher public sector investment in agriculture in this region i.e. by creating infrastructure and also providing subsidiary/alternative employment opportunities agricultural performance can be given a boost in the region.

A bizarre situation is found in case of Bundelkhand. Despite having better infrastructural facility, Bundelkhand is still performing outrageously. This part of the state fails to use its existing infrastructure and is unable to revitalise its agriculture. Bundelkhand region has distinct natural characteristics and has much lower irrigation intensity as compared to other regions. The region is suffering from low productivity which has resulted in low income from cultivation.In this region cropping intensity is too low. The current scenario is that due to high requirement of water in the production of peppermint the ground level of water and water availability has declined sharply and peppermint extraction centre are being closed. Thus farmers are shifting to green pea as a last resort for commercial crop. Beside this, in the sphere of food grain rice production is negligible and there is greater dominance of wheat in the region. Overall, Bundelkhandregion is lagging behind Western and Central region in demographic profile also and have high incidence of poverty. Thus, the condition of farmers is pitiable and there is a crisis like situation for them.

## Section – IV Conclusion & Policy Suggestions

The existence of huge variations in status of agriculture has become problematic and need serious attention. From the above analysis it is clear that the variation in status of agriculture is driven by variations in historical, geographical and demographic factors. For a huge region like Eastern UP which consists of 28 districts, backwardnessin terms of infrastructure and demographic profilehas hampered the growth of agriculture. Contrary to this, Western region

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is performing better with having good infrastructural facility and exploiting the resources as well.

Bundelkhand is a typical case where although infrastructural facilities exist yet since production relation is not conducive to agricultural growth the facilities remain underutilised. One thing which is remarkable in the above study is that except Bundelkhand those regions which have good infrastructural facility are also exploiting the resources well and their performance is also high. Thus, availability of infrastructure to a greater extent affects the agriculture via utilisation of resources but it can never be said to be the only or all important factor that does the trick. Government's role does not end by creating some minimum basic infrastructure for growth of agriculture; it has to play a decisive role in shaping the evolution of production relations and improving the lot of the farmers. Improvement in infrastructure would definitely provide a sound foundation to agriculture, yet it will not necessarily ensure viability of agriculture and sound financial health of those who are dependent on agriculture. Hence, what we need is not just agriculture centric policy Rāther farmer centric policy.

We can give following suggestions to boost agriculture and ensure financial health of those dependent on it –

- Public investment in infrastructure can foster the growth of agriculture in Eastern region which is backward in facility. The road and transport system,market facility, production societies and credit facility have greater impact on farmers' decision making and their investment in land. Investment in these facilities will not only resurrect the agriculture in Eastern region but also determine the growth of agriculture state level.

- In Western region performance of agriculture is good but still some districts are lacking in infrastructural facilities. Thus, the redistribution of the agricultural resources and policy focus is needed.

- The condition of Bundelkhand is bizarre; here geographical and climatic factor is a major hurdle. But still it is clear from the above analysis that the farmers are less aware and the utilisation of available resources can give a push up to agriculture. Inter alia, the inducement of nonfarm activities in countryside of Bundelkhand can minimise the pressure on agriculture and provide alternative livelihood options.

- The problem with below par performance of agriculture exists because of the neglect of peasant concern in Bundelkhand and Eastern Uttar Pradesh. The solution of course lies in adoption of a *peasant-centric policy*. Nobody would can undermine the importance of infrastructure, yet what is required is facilities and provisions that cater to specific needs of farmers of specific regions. Peasants need to be made the main focus of the agricultural policy. The important steps that the government needs to take are –
  o Providing mechanism of price support which is judicious and takes into account the question of viability of agriculture (farmers need to be insured certain minimum profit over the investment made by them),

o   Provision of sufficient extension services and agricultural techniques and crop varieties that are suitable to regions based on their climatic factors and natural resource constraints. Thus we need farmers from Bundelkhand to be made aware of specific technique that are suitable for them and crops that they can grow given the shortage of irrigation facilities, nature of soil etc.

o   Introduction of extensive system of crop insurance & riskmanagement especially for small and marginal farmers who operate with small capital base and are ill equipped to face the vagaries of monsoon and market. This is specially going to come handy for farmers located in Bundelkhand and Eastern UP.

o   Developing effective agricultural marketing network especially for farm produce of small and marginal farmers. The present system of government procurement has its own drawbacks and leakages that work against the vulnerable farmer groups.

We can end by saying that agriculture remains at the centre in states like Uttar Pradesh where manufacturing sector has not truly picked up and survival of agriculture and those dependent on it is crucial for the state's economy. It is high time that problems of specific regions are identified and appropriate policy interventions that are region specific are taken now. Neglecting the regional nature of the problem of agriculture and failure to make appropriate intervention is going to be fatal.

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## Economics of Paddy Crop in District Anantnag, Jammu and Kashmir
### *Tajamul Khurshid. and ** Gyan Prakash

## Introduction

Rice culture and consumption in Kashmir has been in vogue since the drainage of water from Satisar by Kashyap Reshi. Among the chief crops that ripen in autumn in Kashmir, rice (Oryza Sativa) (dhaney/shali in Kashmir) has been extensively grown in irrigated lands since time immemorial for food and fodder purposes. Rice remained a crop of prime importance in Kashmir; it alone contributes more than 74 percent of the total rice produced in the state.It is a kharif crop and is sown in May-June and harvested in autumn. It is primarily grown in plain areas.The rice crop grown mostly in Kashmir region also known as _Cultivators Paradise'.Rice is grown in varied soil conditions but deep clayey and loamy soil, which turn in to soft mud when puddle and develop cracks on drying, provides the ideal condition and rainfall between 150-300 cm is suitable for its growth. Cultivation of rice requires hot and moist climate, day temperature of 20-33$^0$C and night temperature of 15-20$^0$C are suitable for optimum growth and higher yield.Rice production in the state is predominantly a mono cropped activity with a very high consumption and most important staple food than districts of the State.These four districts together produces about 65.39 percent of total paddy other states of India.Anantnag, Jammu, Baramulla and Pulwama are the major paddy production and occupies about 59.87 percent of total area under paddy in the state. Anantnag and Pulwama are the only districts in Jammu and Kashmir whose production is large as compared to remaining districts of the state. Anantnag is also called the rice bowl of the state, and it is equally rich in landscape of lush green meadows as the district is provided with rich natural and water resource management, apart from this the Anantnag district has got the large area under the cultivation of rice, 40375 hectares of land is under cultivation of rice, and the production of rice in the district is 105726 tonnes with a productivity of 2.62t/ha. The area under the rice is distributed by both the regions in which about 40 percent of area is with Jammu division while as 60 percent of the area is with Kashmir division. According to the Census 1994-95, the Kashmir region accounted for 61 per cent of total cultivable land under rice with the highest yield of 26.13 q/ha as compared to approximately 15.96 q/ha in the Jammu region.

Paddy crop is the main staple food of the state particularly Kashmir region. There is a need to increase the production of the said crop because of growing population and decreasing area under the paddy crop as the cultivators shift from this crop to other cash crops because ---
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the prices of this crop is low which hardly bears the cost of cultivation. Thus for analyzing this following objectives were taken.

1. **Objectives**
    1. To know the production, productivity and area of paddy crop in Jammu and Kashmir State.
    2. To estimate the input-output relations between production and different input factors

2. **Review of literature**

**Singh and Chandra (2003):** tested various functional forms and found that exponentialfunction was the most appropriate to examine the growth trends of area, production and yieldof paddy in India. They studied the growth performance for different periods and used‗t' testto test the significant difference between growth rates of any two periods of aggregate. Thestudy found that as a result of increase in area under cultivation and yield, the overall growthrate in paddy production had been very significant (2.96) during the 1975/76 –1990/00period. Yield increased by 2.42 per cent whereas acreage increased by 0.52 per cent.

**Tuong and Bouman, (2001):** Rice is a proliferate user of water,consuming half of all fresh water resources. In Asia, 17 million ha of irrigated rice area may experience ―physical water scarcity‖ and 22 million ha may have ―economic water scarcity‖ by 2025.

**Virk *et al., (*2004):** Rice is one of the important food crops in the worldand ranks second in terms of area and production. It isthe staple food for about 50 per cent of the populationin Asia, where 90 per cent of the world‗s rice is grownand consumed. Asia‗s food security depends largelyon the irrigated rice fields, which account for morethan 75 per cent of the total rice production.

**Velayutham and Palaniappan (2003):** studied the crop diversification in India and foundthat more than 250 cropping systems are being followed in the country of which 30 croppingsystems are predominant. These 30 systems include rice-wheat, rice-rice, rice-grain, rice-mustard, rice-groundnut, rice-sorghum, groundnut-rice and sorghum-rice. Crop diversification had been studied by analyzing change in area under major crops during the period 1970-71 to 1998-99. It was found that the area under total cereals remained static at about 102 million hectares while there had been a significant increase in non-grain crops such as cotton, sugarcane, fruit and vegetables during that period. The economic return was one of the major considerations for adoption of major cropping systems at farm as well as regional level.

This paper has been divided into four sections. Section 1 deals introduction with objective. In second section the review of literature has been given. The methodology is in section 3. Section 4 deals with empirics and Fifth section is related with conclusion andpolicy implications.

### 3.  Research methodology

The present study has been conducted in district Anantnag which is based on both primarily and secondary information. The primary information has been obtained through schedules; convenience sampling has been done as per the requirements of the study. There are 8 blocks in district Anantnag, one block is selected randomly,in which 100 paddy cultivators has been selected conveniently for the information requirements of the present study, 30, 30 and 40 farmers were studied from each category viz, large farmers, small farmers and marginal farmers respectively. The secondary data for examining the area, production and productivity were collected from Directorate of Economics and Statistics Government of Jammu and Kashmir (Digest of Statistics, 2012-2013). In order to find out the compound growth rate of Area, Production and Productivity following semi log model has been used.

$\text{Log } Y_t = a + b_t + u_t$

Where $Y_t$ = Area of Production/ Productivity of the

Paddy a= Constant

b= Instantaneous growth rate

t= Time period

$u_t$= Error term

The CGR are calculated by the formula

CGR= [Antilog (b)-1]*100

In order to estimate the input-output relation between production and different input factors, an attempt is made in this paper to measure the changes in all the three types of growers caused by each of factor, such as tractor, human labor, seed, manure, fertilizers, by estimating the regression equation using production of paddyas the dependent variable, the Cobb-Douglas type of production function fitted to the data for the present study is given by:

$Y = aX_1^{b1} X_2^{b2} X_3^{b3} X_4^{b4} X_5^{b5}$

Where, Y= production of paddy/acre

$X_1$= human labour/acre (days)

$X_2$= tractor power/acre (hour's)

$X_3$= Seed/acre (kg)

$X_4$= Manure/acre (kg)

$X_5$= Fertilizer/acre (kg)

a= constant or intercept

$b_1$ $b_2$ ........., $b_5$= production elasticities

On logarithmic scale, the production function takes the linear form as:

$\text{Log } Y = \log a + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + b_4 \log x_4 + b_5 \log x_5 + U$ _U' being the random disturbance term.

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## 4. Empirics

**Table 1: Area, Production and Productivity of Paddy, Jammu & Kashmir (1999-2000 to 2012-13)**

| Year | Area (000/Ha) | Percentage change over earlieryear | Production (000/Mts) | Percentage change over earlier year | Productivity (Mts) | Percentage change over earlier year |
|---|---|---|---|---|---|---|
| 1999-00 | 250.63 | ------ | 3915 | ------ | 15.62 | ------ |
| 2000-01 | 244.05 | -2.62 | 4253 | 8.63 | 17.42 | 11.52 |
| 2001-02 | 249.80 | 2.35 | 4223 | -0.70 | 16.90 | -2.98 |
| 2002-03 | 236.20 | -5.44 | 4214 | -0.21 | 17.84 | 5.56 |
| 2003-04 | 259.82 | 10 | 5048 | 19.79 | 19.42 | 8.85 |
| 2004-05 | 250.04 | -3.76 | 4928 | -2.37 | 19.70 | 1.44 |
| 2005-06 | 259.01 | 3.58 | 5574 | 13.10 | 21.52 | 9.23 |
| 2006-07 | 252.52 | -250 | 5546 | -0.50 | 21.96 | 2.04 |
| 2007-08 | 263.25 | 4.24 | 5620 | 1.33 | 21.34 | -2.82 |
| 2008-09 | 257.63 | -2.13 | 5637 | 0.30 | 21.88 | 2.53 |
| 2009-10 | 259.89 | 0.53 | 5011 | -11.10 | 19.28 | -11.88 |
| 2010-11 | 261.35 | 0.56 | 5236 | 4.49 | 20.03 | 3.89 |
| 2011-12 | 262.17 | 0.31 | 5325 | 1.69 | 20.31 | 1.39 |
| 2012-13 | 261.66 | -0.19 | 5500 | 2.76 | 21.13 | 4.03 |

**Source: Digest of Statistics (2012-13), Govt. of Jammu and Kashmir**

$CGR = Y_t = a + b_t$

$= [Antilog (b) - 1] * 100$

Where $Y_t$ = Area of Production/ Productivity of the
Paddy a= Constant
b= Instantaneous growth rate
t= Time period

Compound annual growth rate (**CGR**) of Area, Production and Productivity of Paddy crop in J&K over the period 1999-2013 are 0.55%, 2.44% and 1.89% respectively.

**Table 1** reveals that the area under cultivation of paddy crop over the period 1999-2000 to 2012- 2013 increased by 0.55%. This growth in area is due to shift within agricultural crops and the production and productivity of the paddy crop has also increased by 2.44% and 1.89% respectively from 1999-2000 to 2012-2013. Despite being the little growth in area (0.55%), the production and productivity of the paddy crop increased by (2.44%), (1.89%) respectively, it is due to that the cultivators were using modern equipment's instead of traditional ones.

### Graphical representation of Area and Production under Paddy crop
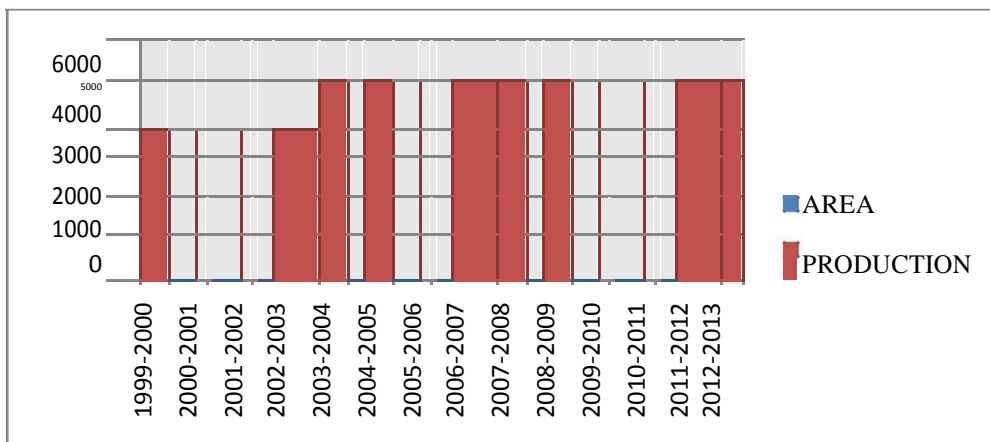


**Results of estimated regression equations of paddy crop production function for village Jablipora district Anantnag.**

| Type of Farmers. | No. of Observations. (N) | constant Tractor (a) | Regression coefficient of: | | | | | R | $R^2$ | F |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | labour $(X_1)$ | Seed $(X_2)$ | Manure $(X_3)$ | $(X_4)$ | Fertilize $(X_5)$ | | | |
| Large | 30 | 2.06 | 0.065 | -0.051** | 0.094** | 0.378** | 0.422 | 0.84 | 0.71 | 9.830 |
| Small | 30 | 1.89 | 0.025*** | -0.012 | -0.027 | 0.325*** | 0.565* | 0.81 | 0.67 | 9.73 |
| Marginal | 40 | 0.71 | 0.386* | 0.065 | 0.140*** | 0.334 *** | 0.76 | 0.58 | 7.74 | 9.78 |

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- Note- Figures in parenthesis indicate_t' – statistics of regression coefficients

\*    Indicates significance of coefficient at 1 percent level.

\*\*   Indicates significance of coefficient at 5 percent level.

\*\*\*Indicates significance of coefficient at 10 percent level.


**The estimated Cobb-Douglas multiple regression equation in case of large farmers for the paddy crop has been worked out to be:**

$$Y = 2.06 \; X_1^{0.065} \; X_2^{-0.051} \; X_3^{0.094} \; X_4^{0.378} \; X_5^{0.422}$$

The other constants of equation are presented as under:

$=5$
$=5$ $b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5$ = sum of elasticities of product = 2.968

$R^2$=coefficient of multiple determination=0.71

R=coefficient of multiple correlation=0.84

The sum of elasticities of production is observed more than 1( $=5^{=5} > 1$) which indicates an increasing returns to scale. While for $R^2$as 0.71 indicates the selected independent variables $x_1, x_2, x_3, x_4, x_5$ explain 71 percent of variation in the value of Y, dependent variable. The remaining 29 percent of variation is explained by other factors unaccounted for.

## The estimated Cobb-douglas multiple regression in case of small farmers for the paddy crop has been worked out to be:

Y=1.89   $X_1$ $^{0.025}$$X_2$ $^{-0.012}$   $X_3$ $^{-0.027}$   $X_4$ $^{0.325}$   $X_5$ $^{0.565}$

The other constants of equation are presented as under:

$=5$
$=5$ $b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5$ = sum of elasticities of product = 2.766

$R^2$=coefficient of multiple determination=0.67

R=coefficient of multiple correlation=0.81

The sum of elasticities of production is observed more than 1( $=5^{=5} > 1$) which indicates an increasing returns to scale. While for $R^2$ as 0.67 indicates the selected independent variables $x_1, x_2, x_3, x_4, x_5$ explain 67 percent of variation in the value of Y, dependent variable. The remaining 33 percent of variation is explained by other factors unaccounted for.

## The estimated Cobb-douglas multiple regression equation in case of marginal farmers for the paddy crop has been worked out to be:

Y=0.71   $X_1$ ——   $X_2$ $^{0.386}$   $X_3$ $^{0.065}$   $X_4$ $^{0.140}$   $X_5$ $^{0.334}$

The other constants of equation are presented as under:

$=5$
$=5$ $b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5$ = sum of elasticities of product = 1.635

$R^2$=coefficient of multiple determination=0.58

R=coefficient of multiple correlation=0.76

The sum of elasticities of production is observed more than 1( $=5^{=5} > 1$) which indicates an increasing returns to scale. While for $R^2$ as 0.58 indicates the selected independent variables $x_1, x_2, x_3, x_4, x_5$ explain 58 percent of variation in the value of Y, dependent variable. The remaining 42 percent of variation is explained by other factors unaccounted for.

The detailed estimates of the effects of each of the technological factor on productivity of paddy crop are given below:

## Tractor

The elasticity of coefficient so far tractor input is concerned which has been found positive in large and small type of farmers, and has been found to be significant at 10% level of significance in case of small farmers, and While as it is insignificant in case of large farmers. The magnitude of the coefficient indicates that keeping the other explanatory variables constant 1% increase in mechanical labour would yield 0.65% and 0.025% in the production of paddy crop in the category of large and small farmers.

**Human Labour**

The elasticity coefficient associated with labour is found to be positive in case of marginal farmers and negative in small and large farmers, and has been found to be insignificant at 1% level in case of marginal farmers. While as it is found to be insignificant in the large and small cultivators. The magnitude of this input factor indicates that 1 percent increase in labour would lead to increase 0.386% in the production of paddy crop in case of marginal farmers, however 1% decrease in human labour would lead to decrease 0.051% and 0.012% in case of large and small farmers.

**Seed**

The elasticity of coefficient of Seed is positive in large and marginal farmers, while in case of small farmers it is negative and has been found to be significant at 5% level in case of large farmers. While as it is found to be insignificant in cases of small and marginal. The magnitude of this coefficient indicates that keeping the other explanatory variables constant 1% increase in Seed would lead to increase 0.094% and 0.065% in the production of paddy crop in case of large and marginal farmers, and 1% decrease in Seed would lead to decrease 0.027% of paddy crop production in case of small farmers.

**Manure**

The elasticity coefficient associated with manure use is positive in all the three cases, and has been found to be significant at 5% level in case of large farmers and 10% level in cases of small and marginal farmers. The magnitude of this coefficient indicates that keeping the explanatory variables constant 1% increase in manure would lead to increase 0.378%, 0.325% and 0.140% in the production of paddy crop in all the three cases viz, large, small and marginal cultivators respectively.

**Fertilizer**

The elasticity coefficient associated with fertilizer use is positive in all the three cases (large, small and marginal cultivators, and has been found significant at 1% level in case of large and small and 5% level in case of marginal cultivators. The magnitude of this coefficient indicates that keeping the explanatory variables constant 1% increase in fertilizer would lead to increase 0.422%, 0.565% and 0.334% in paddy production in cases of large, small and marginal cultivators respectively.

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## 4. Conclusion and Policy Implication

Production of the Paddy in the state is pre-dominantly a mono cropped activity with a very high consumption and most staple food than other states of India. Mostly four districts together produces about 65.39% of paddy production and has 59.87% of total area under the crop. The Anantnag district supercides in case of area and production in Jammu and Kashmir. So, far the census 1994-95 is concerned the Kashmir region accounted for 61% of total cultivated land under rice with a highest yield 26.13 quintal/ha.

The study shows increasing trend with respect to Area, Production and Productivity so far the figures from 1999-2013 are concerned. Compound annual growth rate of Area, Production and Productivity of Paddy in Jammu and Kashmir from 1999-2000 to 2012-2013 has been found positive (0.55%, 2.44% and 1.89% respectively. Coefficient of correlation with respect to large farmers found to be (0.71%) and coefficient of all accounted input factors except human labour has been found positive in case of large farmers. With respect to small farmers (0.67%) correlation has been seen and coefficients of input factors such as tractor, manure and fertilizer observed positive. In case of marginal farmer's coefficients of all input factors has been found positive and (0.58%) correlation. In All the three type of cultivators (large, small and marginal) increasing returns to scale ( _____ ) also observed in the study that great percentage of the variation in terms of production has been explained by independent input factor (manure).

- There is need to improve the irrigation facilities as the farmers face the problems of scarcity of water. Therefore government should take proper steps to plant pump sheds.
- Fertilizers and other farm substances should be provided to the cultivators on cheaper rates.
- The department of agriculture should provide high yielding variety seeds.
- The Government should make proper arrangements for the production and distribution of pesticides among farmers.
- The Government as well as other financial agencies should provide credit facilities to the cultivators at affordable rates.
- The minimum price support policy should be properly implemented so that the cultivators may get appropriate prices.
- The information should be given to cultivators from time to time through media or social networks about the use of modern techniques.
- The Government should organize awareness programmes through Nukkad show puppet show/ seminar/ Kisan Mela regarding new farm technology.

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# Empowerment of women through Education

Dr (Mrs.) Meenu Kumar

## Abstract

Empowerment of women contributes towards overall economic development of society and nation both at micro and macro level. Women empowerment means their active participation in economic activities and decisions making. As population of women constitutes approximately 50% of the total population of the world, they must have every right to be treated equally with men in every sphere of life and society. It refers to an environment where there is no gender bias and has equal rights in community, society and workplaces. Women empowerment and gender equality are also the eight millennium Development goal of UNO. Education is one of the tools to strengthen the position of women in society but due to gender inequality empowering women is progressing at a very slow pace. This paper deals with the women empowerment and gender inequality in higher education in India.

**Key Words:** Women Empowerment, Gender Inequalities, Higher Education

## 1. Introduction: i. Women Empowerment?

The term women empowerment has become popular after 1980. Women empowerment means giving power or authority to women. It not only means to empower their economic status but social, political and cultural status as well. Women empowerment is defined as improving the ability of women to access the constituents of development—in particular health, education, earning opportunities, rights, and political participation. It is the process of equipping and strengthening women suffering from various disabilities inequalities and gender discrimination. it refers the process of availing equal right opportunities, responsibilities and power position in the society so that they can control their own life

According to the **U.N. -** women's empowerment mainly has five components:
- ❖ Generating women's sense of self-worth;
- ❖ Women's right to have and to determine their choices;
- ❖ Women's right to have access to equal opportunities and all kinds of resources;
- ❖ Women's right to have the power to regulate and control their own lives, within and outside the home; and
- ❖ Women's ability to contribute in creating a more just social and economic order.
  Srivastava, [1] (2014) opines _Empowering the women means creating such an environment in which they can take independent decisions for their personal development and the

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development of society in general. Empowerment is the process by which the women achieve increased control and participation in decision making which in turn helps to achieve equal basis with men in various spheres – political, economic, social, cultural and civil'.

Esther Duflo[2] (2011) emphasises the bi-directional relationship between economic development and women's empowerment. In one direction, development alone can play a major role in driving down inequality between men and women; in the other direction, continuing discrimination against women can, as Amartya Sen has forcefully argued, hinder development.

## ii. Role of education in women empowerment:

The importance of education in economic growth (Schultz[3] 1961) and human development (Sen[4] 1985, 1993[5]) has been widely recognized. Education is the powerful tool to enhance the status of women by empowering them in all spheres of life. It is that magic wand which can bring miraculous changes in the life of women and enabling them to understand their potentials their right and developing skills to take decisions.

## iii. Obstacles

The most important obstacles in women empowerment is gender disparity. As gender equality and women empowerment have been brought together in MDG clearly indicates that these are the two sides of a coin. Women empowerment will lead to gender equality and vice versa.
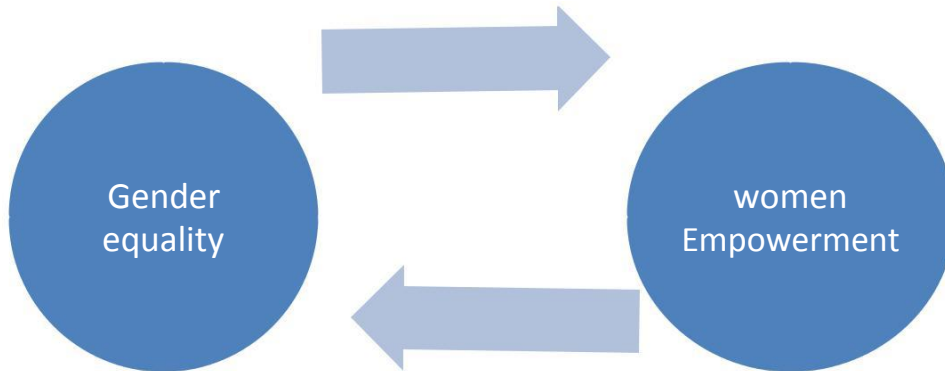


Gender disparity is a prevalent feature in every walk of life in India. After independence government has taken stern action and adopted various policies for greater and equal participation of male and female from all section of the societies irrespective of economic status, caste and location in availing health facilities, education, employment and wages. At the global level the picture is very gloomy. In a report, The Power of Parity: Advancing Women's Equality in India, released by McKinsey Global Institute ―India's global Gender Parity Score or GPS is 0.48, where a score of 1 would be ideal. India's score represents an ―extremely high‖ level of gender inequality, which compares poorly with 0.71 for Western

Europe and 0.74 for North America and Oceanial [7] ( published by Indian Express on 4 Nov 2015).Further result of report has been shown is shown in Table 1.

### Table 1 Gender Parity: India and world

|  | Western Europe | China | India |
|---|---|---|---|
| **Gender Equality at work** | | | |
| Labour force participation( F/ M Ratio) | 0.792 | 0.817 | 0.338 |
| Unpaid care work(M/F ratio) | 0.482 | 0.389 | 0.102 |
| **Gender equality in society** | | | |
| Maternal mortality rate | 6 | 32 | 190 |
| Education level | 0.997 | 0.973 | 0.763 |
| **Legal Protection and political Voice** | | | |
| Legal Protection Index | 0.771 | 0.583 | 0.399 |
| Political representation | 0.486 | 0.191 | |
| **Physical security and autonomy** | | | |
| Child marriage (%of girls) | 1 | 2 | 27 |
| Violance against women(% of women) | 22 | 15 | 37 |

Data reveals that women in India are lagging in all walks of life in spite of continuous efforts of government. The gap in the male-female literacy rate is just a simple indicator. Female literacy rate is only 64.6 as compared to, Enrolment ratio of women in primary is 629 lakh against 676 lakh males, in secondary 182 lakhs female against 201 lakhs males, in senior secondary 111lakh females against 124lakhs males and in higher education 157lakhs females against 185 lakhs male students.

**2. Objective of the study:** As education is the foundation stone of women empowerment as it can only improve the status of women in the society and ward off the inequalities from all walk of life. The objective of the study is to study the position of women and girls in educational area and their employment status.

**2.  Literature Review:**

Malik and Courtney [7] (2011) studied that how higher education offers empowerment to women and reported that economic independence and increased standing with the family were

the benefits of higher education. It also enabled the women to impact the discriminatory practices.

According to Jahan Aliaz and Sashikal A.D.J [8] (2013) education is the most potent weapon related to women's empowerment. They emphasized that a healthy and well educated informed and well employed woman will definitely be able to assert her rights and make concrete contribution to the development process. Thus education does lead to women development and creates awareness about women's rights and is thus empowering at the all level

Noreen and Khalid [9] (2012) explored the possibilities and opportunities for women empowerment and how the participants in the study understand the role of higher education in empowerment of women at home and at work. They found out that the women should continue higher education and career by strategizing and acknowledging the support of their family members.

Banerjee [10] (2012) studied the empowerment of women through higher education and she reported that the empowered women challenged the man in their workplace and were seen in the powerful corporate positions.

Kandpal et al [11] (2012) studied the participation in community level female empowerment program in India increases participants physical mobility, political participation and access to employment.

Desai et al ( 2009) [12] blamed the historical prevalence of gender inequality in a patriarchal Indian society for continued presence of educational gaps

### 3.Data Collection and Analysis:

The study is based on Secondary Data. As major focus of the women empowerment in this paper is education, data regarding education has been compiled to reach conclusion.

i. **Literacy rate:**

As a result of increased focus Country has witnessed remarkable increase in literacy rates from 18.3% in 1951-to 73% in 2011. But the gender disparity narrowed only slightly is nearly 16.3% as shown in Table No 1. and Figure No 1

**Table 1 Growth in Literacy and Gap between Male and female Literacy**

| Year | Total | Male | Female | Gap |
|------|-------|------|--------|-----|
| 1951 | 18.3 | 27.2 | 8.9 | 18.3 |
| 1961 | 28.3 | 40.4 | 15.4 | 25,0 |
| 1971 | 34.5 | 46.0 | 22.0 | 24,0 |
| 1981 | 43.6 | 56.4 | 29.8 | 26.6 |
| 1991 | 52.2 | 64.1 | 39.3 | 24.8 |
| 2001 | 64.8 | 75.3 | 53.7 | 21.6 |
| 2011 | 73.0 | 80.9 | 64.6 | 16.3 |

**Data Source:** Office of the Registrar General & Census Commissioner, India

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The Table reveals that male literacy rate has increased from 27.2 % to 80.9%, and female literacy rate has reached from 8.9% to 64.6 %.



Fig. 1 Growth in Literacy and Gap between Male and female Literacy
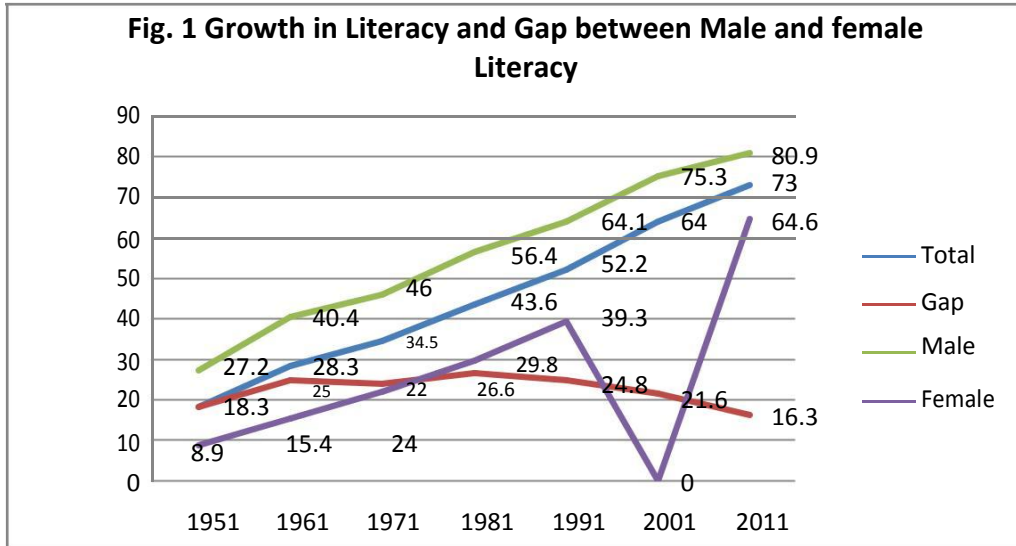
ii.    **Higher Educational Institutes:**Table 3 shows the growth in the no of universities and colleges since 1950 to 2015.The results indicates that the no of colleges were 578 in 1950-51 which increased to 38498 1n 2014-15. As far as universities number are concerned it has increased to 760 in 20014-15 from 27 in 1950-51.

**Table 3 : No of Recognized Educational Institutions in 2014-15**

| Year | College | University |
|---|---|---|
| 1950-51 | 578 | 27 |
| 1960-61 | 1819 | 45 |
| 1970-71 | 3277 | 82 |
| 1980-81 | 6963 | 110 |
| 1990-91 | 5748 | 184 |
| 2000-2001 | 10152 | 254 |
| 2005-06 | 16982 | 350 |
| 2010-11 | 32974 | 621 |
| 2014-15 | 38498 | 760 |

Data Source**:** Office of the Registrar General & Census Commissioner, India



Fig. 2 Number of Universities and colleges in India in 2015

Universities 2%

Colleges 98%

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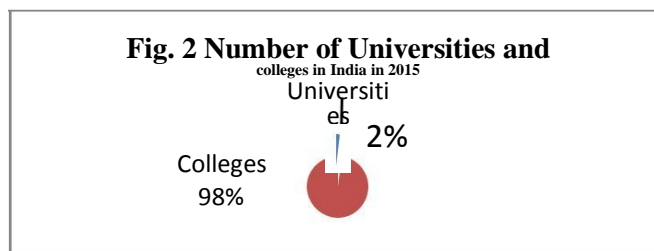
The Table No 4 reveals the types of universities. If we go into the types of universities we find that out of 760 universities there are 43 central universities, 316 state public university, 122 Deemed universities, and 181 state private universities. There are only one central open universities and state private open universities.. Same has been depicted in Fig No 3 below.

## Table 4 : Number of Universities by Type in 2014-15

| Universities | |
|---|---|
| Central University | 43 |
| State public university | 316 |
| Deemed University | 122 |
| State Private University | 181 |
| Central open university | 1 |
| State Open University | 13 |
| Institutions of National Importance | 75 |
| State Private Open University | 1 |
| Institutions under state legislature Act | 5 |
| Other | 3 |
| **Total** | **760** |

**Data Source:** Ministry of Human Resource Development, Government



Fig. 3 Types of Universities
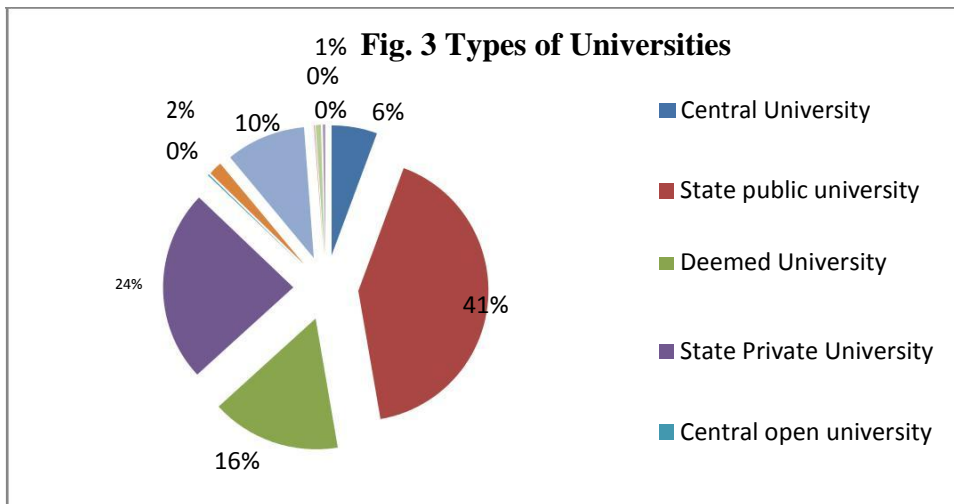
Similarly Table No 5 reveals the types of colleges. On examining the table we find that there are 3845 Diploma level Technical colleges,431 PGDM, 3114 Diploma level Nursing, 4730 Diploma Level Teacher Training colleges and 156 are colleges under ministries.

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### Table 5: Types of Colleges

| Colleges | |
|---|---|
| Diploma level Technical colleges | 3845 |
| PGDM | 431 |
| Diploma level Nursing | 3114 |
| Diploma Level Teacher Training | 4730 |
| Institutes under Ministries | 156 |
| **Total** | **38498** |

Graphically the result is also shown in Fig 4.



Fig. 4 **Types of Colleges**
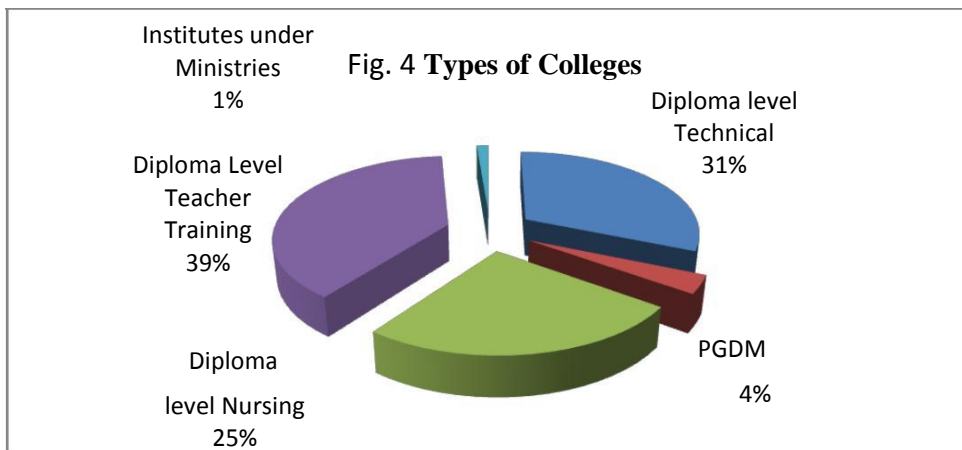
### iii.    Enrolment in Higher Education:

The Gender Parity Index (GPI) is the ratio of the number of female students enrolled at primary, secondary and tertiary levels of education to the corresponding number of male student in each level. Thus GPI (based on GER) which is free from the effects of the population structure of the appropriate age group, provides picture of gender equality in education. During 2005-06 to 2014-15, substantial progress has been achieved towards gender parity in education as revealed by GPI in the following figure No 5.



Fig. 5 **Trend in Gender Parity Index in Higher Education**
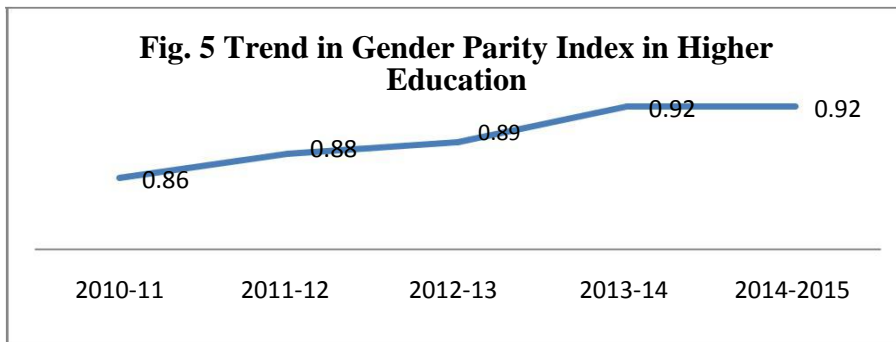
The highest number of students are seen enrolled at Under Graduate level across India. Out of the total 34211 thousand students, a vast majority of 27127 thousand students are enrolled in Under Graduate that is a sweeping 79.42%. On the other hand, second to Under Graduate, 11.82% students are enrolled in Post Graduation which is approximately 3852 thousand students.

**Table 6 Number of male and Female Students enrolled in various courses in Higher Education 2014-15 (In thousand)**

| Degree | Male | Female | Total | Percentage |
|---|---|---|---|---|
| **Ph.D.** | 70 | 48 | 118 | 3.2 |
| **M.Phil** | 14 | 19 | 33 | 0.0964 |
| **Post Graduate** | 1867 | 1986 | 3853 | 11.26 |
| **Under Graduate** | 14467 | 12705 | 27172 | 79.42 |
| **PG Diploma** | 121 | 94 | 215 | 0.62 |
| **Diploma** | 1788 | 720 | 2508 | 7.3 |
| **Certificate** | 74 | 96 | 170 | 0.49 |
| **Integrated** | 87 | 55 | 142 | 0.41 |
| **Total** | **18488 (54.04%)** | **15723 (45.9%)** | **34211** | **100** |

There are 3, 456 students enrolled in Integrated Ph.D. in addition to 107890 students enrolled at Ph.D. Level. There are 118 thousands students are enrolled in Ph.D. Level. The student enrolment from UG going higher to PG is thus decreasing steeply. The third largest share of 7.3% students enrolled at Diploma level in India amounting2508 thousand students. Ph.D., M.Phil. and Integrated levels also have 3.2 % ,0.096% and 0.41% which accounts for118 thousand, 33 thousand. However, a small share of only 142 thousand and 215 thousand students is enrolled each at Certificate and PG Diploma levels respectively, constituting approx. 0.49%. and 0.62% of the total share at each level.

However on examining the table carefully we find that in each course enrollment of male students exceeds female enrollment except in Post Graduate course and M.Phil in which share of female enrollment is little bit more that is 1986 thousand female are enrolled and 1867 thousand male students are enrolled in PG courses and 19 thousand female in M.Phil. in comparison to 14 thousand male students. In other courses such as in Ph.D only 48 thousand girls are enrolled in comparison to 70 thousand boys, in under graduate courses 12705 thousand female are enrolled than 14467 thousands male students..

### Table 7 Percentage Enrolment in various Programmes in Higher Education 2014-15

| Courses | Male | Female | Total |
|---|---|---|---|
| Bachelor of Arts | 24.60 | 32.96 | 28.44 |
| Bachelor of Science | 11.44 | 12.22 | 11.80 |
| Bachelor of Commerce | 10.96 | 10.77 | 10.87 |
| Bachelor of Technology | 8.68 | 3.78 | 6.43 |
| Bachelor of Engineering | 7.61 | 3.57 | 5.75 |
| Master of Arts | 3.27 | 5.36 | 4.23 |
| Bachelor of Arts (Honors) | 3.31 | 4.23 | 3.73 |
| Bachelor of Education | 1.37 | 2.85 | 2.05 |
| Master of Science | 1.33 | 2.15 | 1.70 |
| Master of Business Administration | 1.89 | 1.28 | 1.61 |
| Bachelor of Computer Applications | 1.53 1 | 25 1 | 40 |
| Bachelor of Science (Honors) | 1.37 | 1.25 | 1.32 |
| Bachelor of Business Administration | 1.28 | 0.91 | 1.11 |
| Master of Commerce | 0.84 | 1.33 | 1.07 |
| Bachelor of Law or Laws | 1.05 | 0.54 | 0.82 |
| Others | 19.47 | 15.55 | 17.67 |

**Data Source:** Ministry of Human Resource Development, Government of India

### Table 8 Gross Enrollment Ratio in 2014-15

| GER | Male | Female | Total |
|---|---|---|---|
| **Higher Education** | 25.3 | 23.2 | 24.3 |

Table No 8 discloses the gross Enrollment ratio in higher education which is 24.3. GER for male population is 25.3 and for female population is 23.2.

### iv.  Results and Discussion:

1. Women empowerment is one of the important aspect to bring women in the main stream of development. But in a country like India Gender disparity is a prevalent feature in every walk of life which hinders all efforts of development of society and nation.

2. After independence government has taken stern action and adopted various policies for greater and equal participation of male and female from all section of the societies irrespective of economic status, caste and location in availing health facilities, education, employment and wages.

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3. Education is the best way to empower women and government of India has taken various steps to remove this parity.

4. As a result of this increased focus Country has witnessed remarkable increase in literacy rates from 18.3% in 1951-to 73% in 2011. it has been found that growth of university and colleges are substantial that is no of universities increases from 27 in 1950-51 to 760 in 2014-15.

5. Total enrolment in higher education has been estimated to be 34.211 million with 18.488 million boys and 15.723 million girls. Girls constitute 45.9% of the total enrolment.

6. GER (Gross Enrollment Ratio) in 2014-15 in India is 24.3 with 25,3 is for male and 23.2 is for female.

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# Rural-Urban Linkages and Agricultural Productivity
## A District level Study of Chhattisgarh, INDIA

## Sushil Tripathi[3]

Chhattisgarh, despite all tall claims by the government remains primarily an agricultural State. Agriculture contributes significantly to the state in terms of employment and gross domestic product. The situation of the agricultural sector in the state however, is far from satisfactory. It is facing stagnant productivity, falling profitability, price deflation and withdrawing governmental support. The state once called rice bowl of the country finds its agriculture in deep distress. Among large number of factors that have contributed to the worsening of agriculture in the state, a prominent one is poor infrastructure (C. Calderon and L. Serven, 2004) and very weak rural urban linkages. Poor road network, insufficient expansion of financial institutions, obtrusive communication network, absence of marketing facilities etc. all taken together create an environment in which the agricultural sector and farmers are unable to thrive. It is imperative to establish that how absence of proper infrastructural linkages is adversely affecting agricultural production and productivity and is ultimately leading to sort of crisis situation in the agricultural sector in the state.

A developed rural infrastructure increases agricultural productivity, generates employment opportunities, grows local markets, improves livelihood, reduces price distortions in agriculture (Antle, 1984).There exist a positive relationship between infrastructure, investment and productivity of agriculture. (Binswanger, Khandker and Rosenzweig,1993). Infrastructure linkage plays an important role in term of connecting remote rural areas to the urban center through road, transport, electricity and communication facility. Well-developed rural infrastructure such as road connectivity, irrigation facilities, water supply, rural electrification, primary health, education facilities, storage and fertilizer improve agricultural production at low cost(Qin and Zhang,2012). It is very crucial in state like Chhattisgarh, where the administrative centers of districts are so far from remote rural areas. Farmers in the state are constrained as they find it difficult to either get quality inputs and support from district headquarters or reach their product to urban centers to get remunerative prices.

The primary objective of the paper is to measure the extent of infrastructure linkage in different districts of Chhattisgarh and then to see the extent to which it affects the production, productivity and status of agriculture in the state. Tut theoretical underpinnings. The paper is structured into three sections. Section-I gives a theoretical background by first briefly mentioning rural urban linkage and establishing principality of infrastructure linkage and then later establishing how infrastructure linkage can impact status of agriculture. Section-II gives methodology of the work , Section-III provides results and findings.

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**Section-I Theoretical Underpinning and Review of Literature:**

The link between rural and urban areas is the by-product of urbanization i.e. the cumulative process of population concentration (Tisdale, 1942).The urbanization process anywhere in the world involves profound changes in life that is inevitable, unavoidable and universal. It involves transfer of population from rural to urban areas by way of migration. Urbanization is accompanied by the development of town based large scale industries and changes in the cropping pattern in agriculture in line with the raw material requirements of manufacturing at the urban centres. Understanding the rural–urban linkage is crucial for understanding economic development (OECD, 2013) and ignoring it leads to inefficiencies and causes growth-inhibiting inequality (Evans, 1990, World Bank, 2006). Rural and urban areas are dependent of each other in many ways as shown in the Chart: 1

**Chart-1**
**Rural-Urban Interaction**
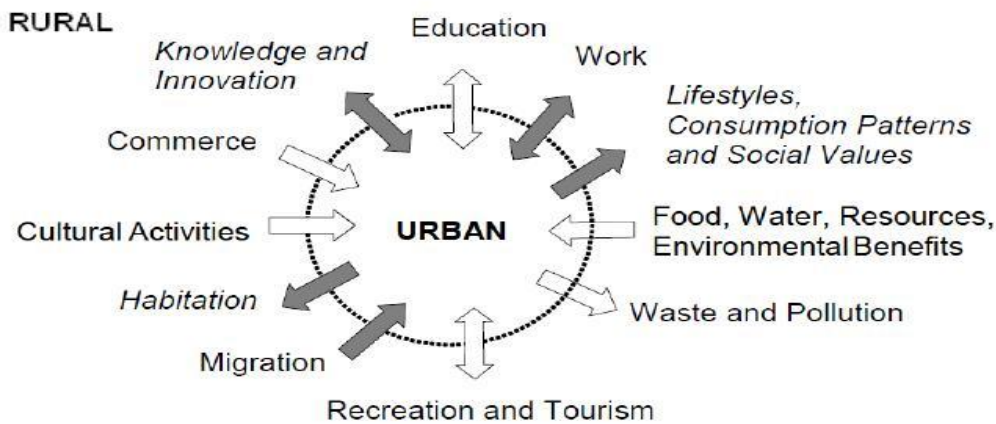


Source: Repp et al. (2012)

Understanding the rural–urban linkage is crucial to understanding economic development and ignoring it leads to inefficiencies and causes growth-inhibiting inequality. There are two important points to be particularly aware about- first, the relationship is a two way relationship i.e. the linkages affect rural areas and growth of rural centres and in turn reinforce the growth and prosperity of urban centres and second, there are two kinds of flows (Chart-2) that linkage makes possible- (a) Spatial Flows-These are flows of people, goods, money and information between urban centres and rural regions, are important drivers of economic activities.(b) Sectoral Flows-These are in form of flow of inputs and finished products between agriculture that is located in rural area and manufacturing and services located in urban area. There exist inter-sectionality between various special flow and sectoral flows that linkage results into. These complicate and make difficult their correct identification and specification in terms of their relation especially their impact on status of agriculture.

**Chart-2 Spatial & Sectoral Flows of Linkages**
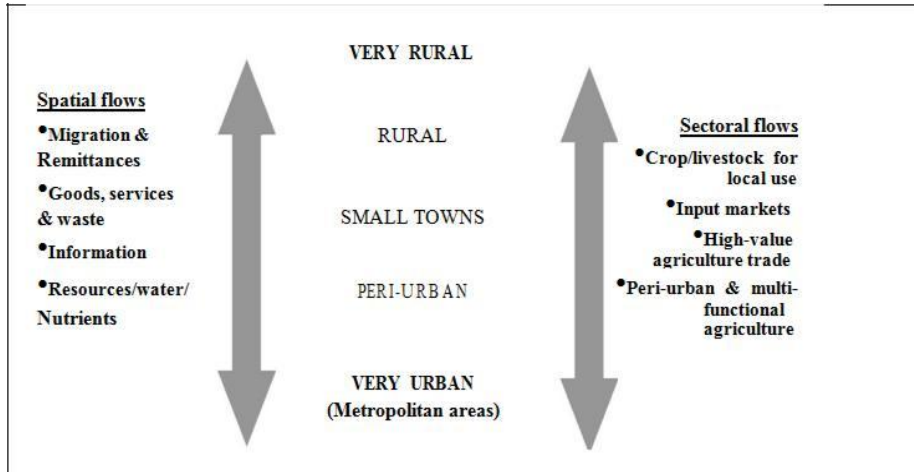


**Source-**Joachim von Braun International Food Policy Research Institute Washington, D.C., USA

There are two Rāther contrasting views about rural-urban linkages-

First, The rural-urban linkages are created by interactions, including sectoral flows of commodities from rural producers to urban and regional, national and international markets, and vice versa (Douglass 1998; Tacoli 2004; van Leeuwen, Nijkamp 2006) With the expansion of urban centers the rural –urban interaction increases andflows become diverse.

Second, With increasing international and even global trade, the traditional flows of (primary) goods - especially food, textiles and timber - from rural production areas to adjacent urban processing and consumption centres more and more shift towards a spatial decoupling. Modern information and communication technologies (ICT) and the ―digital revolution‖ foster decentralization and ―delocalization‖ so that dependencies of rural areas on urban centres as administrative, commercial and cultural ―hubs‖ become less relevant, which also supports the spatial decoupling.

**Infrastructure Linkage**

Among different kinds of rural-urban linkages like production, consumption, demand etc. infrastructure linkage is very crucial in so many ways. This is because infrastructure linkages have potential to accelerate the extent of other rural urban linkages. It promotes production, consumption and financial linkages state by providing basic threshold level of facilities required for their operation. This is especially more important for states like Chhattisgarh where inadequate infrastructure development has reduced the extent of other rural urban linkages. Infrastructure development can give a big incentive to stimulate investment in the state from both internal and external sources. Similarly rural urban infrastructure linkages promote marketing linkages by the presence of regulated and unregulated mandis. It becomes

possible for farmers to sell their primary product directly in these mandis and reduce their dependency from middlemen. They have a comparative advantage in the market as they claim higher prices of their product. Again, infrastructure link boosts the skill and productivity of workforce as it provide health and education facility. Infrastructure linkages and production linkages are the two sides of same coin. Developed infrastructure is the pre-condition for the forward production linkages as primary production goes to food processing units. Infrastructure works as an incentive for modern input and mechanization. It lubricates backward production linkages to promote efficiency and productivity of agriculture. Agriculture is highly dependent on availability of credit and financial infrastructure linkages directly related to the availability of loan facility and other credit requirements.

Chart-3 clearly explains how the rural urban infrastructure linkage is the basic foundation for the other types of linkages.

## Chart-3: The Principality of Infrastructure Linkages
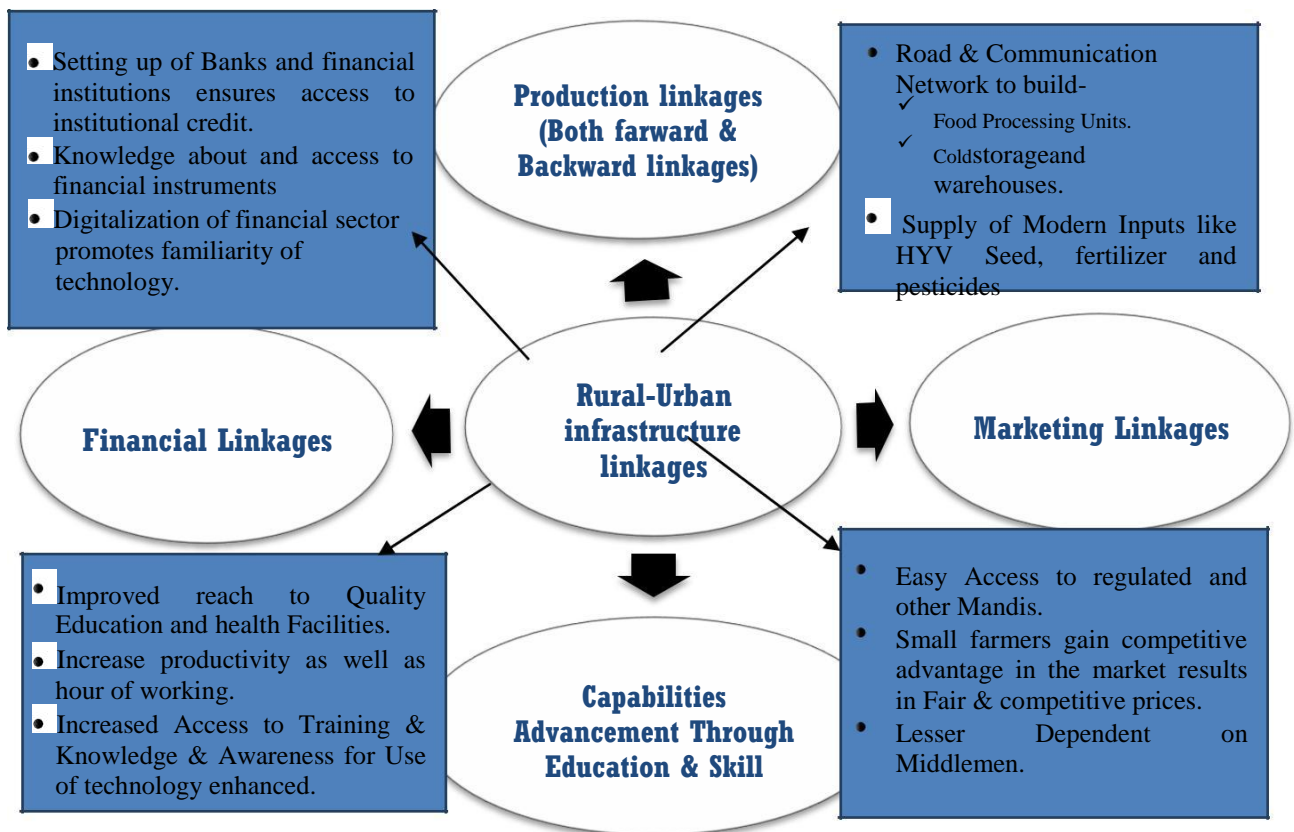


Source: Prepared by Present Author

### Infrastructural Linkage & Agriculture

 **I**nfrastructure linkages are highly crucial for agriculture. Developed infrastructure linkages stimulate growth of agriculture and improve the status of agriculture. The relationship between status of agriculture and infrastructure linkages is shown by chart-4

### Chart-4 Infrastructure Linkage & Agriculture
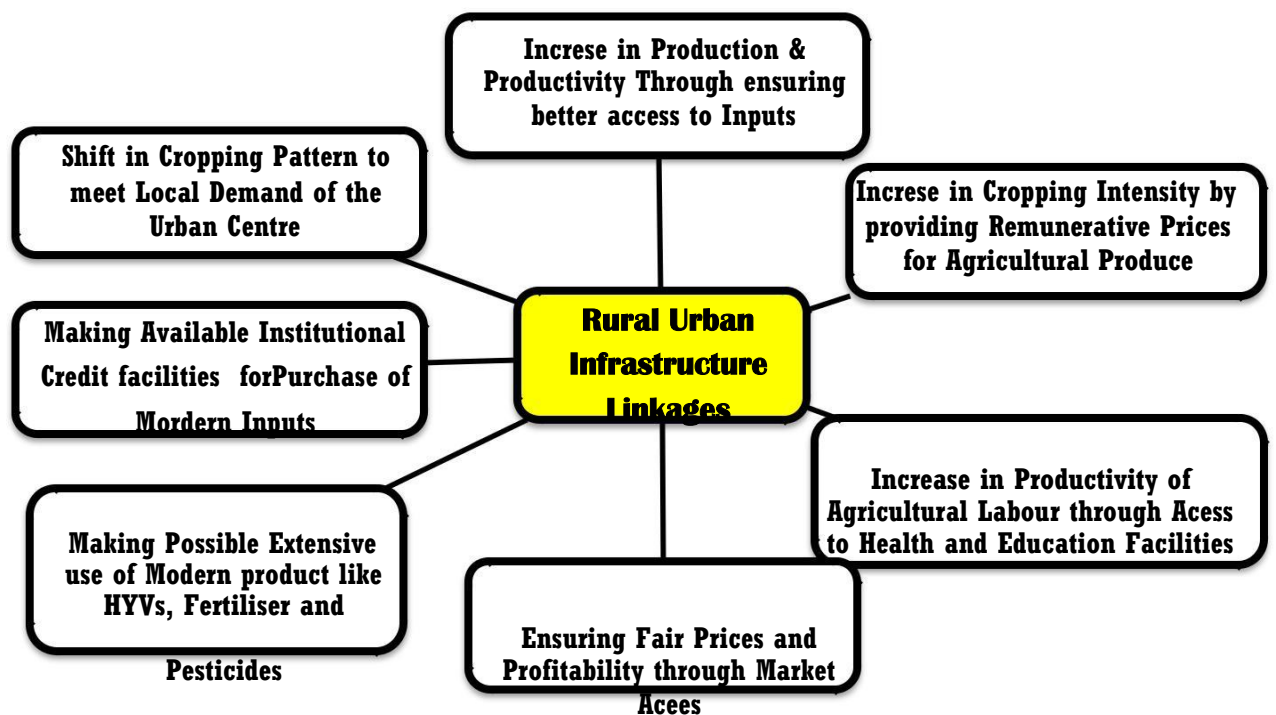


### Section-II Methodology and Database:

There are primarily two kinds of computations that have been made in the present study with the help of secondary data of Chhattisgarh state-

First deals with the measurement of infrastructure linkages in the state by using data from Chhattisgarh Statistical Abstract 2014-15, published by Directorate of Economics and Statistics, Government of Chhattisgarh. The intensive literature survey suggests some key variables for measuring extent of linkages in the each district of Chhattisgarh state. *The six main indicator of infrastructure linkages in districts are : district wise electricity consumption in rural areas, District wise enterprises (total number), district wise regulated market, district wise scheduled commercial banks, district wise government allopathic hospitals and district wise literacy.*

Measurement of infrastructure linkages has been done with the help of preparing district wise composite indices of these variables. The technique used for providing weight to each variable is principal component analysis (PCA). Three major categories of districts have been made on the basis of extent of linkages. A district wise comparative study of different district is being performed to investigate the relationship between rural urban linkages and Status of agriculture.

Second, Efforts have been made for the computation of district wise Status of Agriculture productivity index for Chhattisgarh. Status of agriculture productivity has been computed by picking four major crops of the state. The secondary data source has been used to compute status of agricultural productivity in the state. *The data of district wise per hectare average production in kilogram of four major crop has been taken from "A report on status of agriculture submitted to the agriculture ministry by Agro- Economic research Centre for Madhya Pradesh And Chhattisgarh, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur in 2014.*The four major crops of the Chhattisgarh state are Paddy, Wheat, Gram & Tuar. Again, 27 districts of state is divided into three major categories namely ―high, moderate & low‖ on the basis of their extent Status of agricultural. A district wise comparative study of different district is being performed to investigate the differences in status of agriculture.

**Section-III Result & Analysis**

As already mentioned the present work makes an attempt to compute district wise infrastructure and agriculture productivity indices and then makes an attempt to find the interconnections. We turn our attention to these one by one-

(a) **Rural- Urban linkage in Chhattisgarh:** The measurement of rural urban linkages is quite crucial in terms of identifying and specifying the interconnection, interaction and dependence of different rural urban areas. In this paper linkage has been computed by taking six major component of interaction between two areas. District wise infrastructure index scores and rank of different districts have been mentioned in Table-1 given above.

The district wise differentiation in the extent of linkages in the Chhattisgarh exist as there is concentration of road, electricity, commercial banks and enterprises near major urban centres like Raipur, Bilaspur and Durg. It is quite obvious that these three will lead in terms of infrastructure index. Table-1 presents the index scores f all districts of the state and their rank-

**Table-1 District wise extent of rural urban linkages in Chhattisgarh state**

| District | Infrastructure | | Agricultural Productivity | | District | Infrastructure | | Agricultural Productivity | |
|---|---|---|---|---|---|---|---|---|---|
| | Index | Rank | Index | Rank | | Index | Rank | Index | Rank |
| **Raipur** | **0.719** | **1** | 0.466 | 14 | **Balodabajhar** | 0.359 | 15 | 0.56 | 8 |
| **Bilaspur** | **0.678** | **2** | 0.5 | 11 | **Sarguja** | 0.336 | 16 | 0.546 | 9 |
| **Durg** | **0.636** | **3** | 0.399 | 20 | **Ktgora** | 0.334 | 17 | 0.361 | 23 |
| **Jajgir-Champa** | **0.614** | **4** | 0.585 | 7 | **Surajpur** | 0.321 | 18 | 0.414 | 18 |
| **Rajnadgaon** | **0.6** | **5** | 0.343 | 24 | **Balod** | 0.292 | 19 | 0.445 | 15 |
| **Raigarh** | **0.543** | **6** | 0.652 | 5 | **Mugeli** | 0.276 | 20 | 0.436 | 16 |
| **Jaspur** | **0.494** | **7** | 0.527 | 10 | **Balrampur** | 0.253 | 21 | 0.496 | 12 |
| **Mahasamund** | **0.463** | **8** | 0.292 | 26 | **Korea** | 0.249 | 22 | 0.416 | 17 |
| **Kanker** | **0.457** | **9** | 0.685 | 4 | **Dantewada** | 0.184 | 23 | 0.8 | 1 |
| **Dhamtari** | **0.41** | **10** | 0.624 | 6 | **Gariaband** | 0.171 | 24 | 0.401 | 19 |
| **Bastar** | **0.409** | **11** | 0.735 | 3 | **Bijapur** | 0.165 | 25 | 0.279 | 27 |
| **Kondagoan** | **0.383** | **12** | 0.758 | 2 | **Narayanpur** | 0.092 | 26 | 0.481 | 13 |
| **Kabirdham** | **0.378** | **13** | 0.366 | 22 | **Sukma** | 0.032 | 27 | 0.392 | 21 |
| **Bemetra** | **0.367** | **14** | 0.312 | 25 | | | | | |

Source: Computed by Present Author.

Table-1 clearly highlights wide gap among different districts of the state. The capital city Raipur tops the list of rural urban infrastructure linkages index (0.719) as it is the largest city in Chhattisgarh and has been in existence since the 9th century. Raipur district is important historically because it was centre of many kingdoms like Dakshina Kosala Kingdom and Maurya Empire . The urban agglomeration happens in the Raipur because it is an important regional centre and a city with a history stretching back more than a thousand years. Raipur has emerged as an important regional commercial and industrial destination for the coal, power, plywood, steel and aluminium industries. It is the largest market of steel in India and is among the richest cities and India's biggest iron market having about 200 steel rolling mills, 195 sponge iron plants, 6 steel plants, more than 60 plywood factories, 500 agro-industries.

Bilaspur, the second largest city after Raipur has stronger rural urban infrastructure linkages index (0.678). Bilaspur has the privileged of being called the Law Capital of the state as the Chhattisgarh State High Court is located at village Bodri of the town. It also has the headquarters of South Eastern Coalfields Limited. This city is the commercial centre and business hub of North East Chhattisgarh region. The district is the centre of electric power generation in India and generates approximately 10,000 MW of electricity. Durg is situated on the eastern bank of river Shivnath and is the centre of Chhattisgarh's industrial development. Establishment of Bhilai steel plant in Durg district has created vast opportunities for industrial progress.

As compared to these centres of development if we look at the low lying districts, the situation looks dismal. Districts like Sukma, Narayanpur and Dantewada have very low rural

urban infrastructure linkages index scores (0.032, 0.092 & 0.184 respectively). Among these districts Bastar is predominantly rural and known as land of tribes. About 70% of the total population of the district comprises tribals that comes to around 26.76% of the total tribal population of Chhattisgarh. There is hardly any industry worth the name in the district. . Dantewada is the worst affected Maoist region in the state. In terms of level of development Both Bastar & Dantewada are excluded from mainstream. The disparity exemplifies neglect of some regions of the state and raises serious questions about the policies of the government.Table-2 given below has attempted to classify all the 27 districts of the state in terms of their infrastructure index score.

There are three categories made- First category is the high range that denotes those districts whose value of composite index lies between 0.607 and 1. Second category captures those districts whose value of composite index lies between 0.378 and 606 named as moderate range. Third Category includes those districts whose value of composite index lies between 0.377 to zero called low range. It is clear from above table that majority of districts belong to the low range of rural urban linkage. About 52% of districts are facing serious deficiency in linkages especially Sukuma and Narayanpur where the value of composite index is below 0.1. Only four districts have stronger rural urban linkages whereas 33.33% districts are in moderate range. The variation in rural urban linkages among different districts of Chhattisgarh is due to differences in level of development. The districts of CG are very large in terms of their areas in comparison to its neighbour state. Rural urban linkage is found weak where the area of the district is so large and distance from administrative headquarter is too far from remote rural areas.

Table -2 Rural urban Linkages: A District Wise Analysis

| Rural-        Urban linkages | No.  and  %  to total district | Name of District |
|---|---|---|
| **High Range (0.607-1.00)** | 4    (14.81%) | Jajgir-chmpa, Durg, Bilaspur, Raipur |
| **Moderate Range (0.378-0.606)** | 9    (33.33%) | Kabirdham, Kondagoan, Bastar, Dhamtari, Kanker, Mahasamund, Jaspur, Raigarh, Rajnadgaon |
| **Low Range (0.00-0.377)** | 14   (51.85%) | Sukma, Narayanpur, Bijapur, Gariabad, dantewada, Korea, Balrampur, Mugeli, Balod, Surajpur, Ktgora, Sarguja, Balodabajhar, Bemetra |

Source: Computed by Present Author

**(b) Agricultural Productivity Index in Chhattisgarh**

Turning our attention to agricultural productivity, we notice that here too wide variations exist. Table-1 also shows the district wise productivity indices and ranks. Here again very wide variation could be seen. We have divided the districts into three categories on the basis of their agricultural productivity index scores. Table-3 presents the scores. The 27 district are divided in three major categories.

Table -3 Index of Agricultural Productivity: A District wise analysis

| Agricultural Productivity | No. and % in total district | Name of District |
|---|---|---|
| **High Range** | 4 (14.81%) | Bastar, Kondagoan, Dantewada, Kanker. |
| **Moderate Range** | 8   (29.63%) | Jajgir-Chmpa, Dhamtari, Bilaspur, Sarguja, Balodabajhar, Raigarh , Jaspur, Balrampur, |
| **Low Range** | 15   (55.55%) | Narayanpur, Bemetra, Surajpur, Bijapur, Kabirdham, Ktgora, Durg, Sukuma, Korea, Balod, Mugeli, Raipur Gariab and Mahasamand, Rajnandgoan |

Source: Computed by Present Author

First category is of high range that consists of those districts of Chhattisgarh whose index value lies between 0.665 and 0.800. These are those districts whose per hectare average productivity is very high. Second category consists of districts whose index value lies between 0.492 and 0.664 and covers districts with moderate level productivity. Third category includes districts whose index value lies between0.279 and 0.491. These have a very low level agricultural productivity.

It is clear from the table that more than 50 percent of the districts belong to the low range whose index is between 0.279 and 0.491. These districts are facing stagnant and low productivity. Especially Bemetra, Bijapur, Ktgora, Rajnandgoan, Kabirdham, Sukuma & Durg districts are in alarming situation as their index is below 0.40. Only 29.63% of district whose per hectare average production (Kg.) of four major crop index is between 0.492 to 0.664. Dantewada and Kondagoan top the list as their index is 0.800 & 0.758 respectively. Remaining 8 districts are in moderate zone in which Balrampur district is near to low range. The analysis clearly shows that significant differences exist among districts. The district wise variation in productivity of four major crops in state is definitely due to large number of factor. One of the important factors for the variation is the different level of rural- urban infrastructure linkage.

(c) **Infrastructure and Agricultural Productivity Indices-The Interconnection:** The comparative analysis of ranges of rural urban linkages and productivity of agriculture in different districts produces some interesting results as shown in Table-1.
- ▪ About 70% of districts show strong association between low level of infrastructure development and low status of agriculture. In these districts the per unit electricity

consumption, number of enterprises and financial facilities are in poor condition. These directly hit the status of agriculture productivity. The low infrastructure indices here do not allow the farmers to get suitable inputs at affordable prices, force farmers to rely on non-institutional sources of credit, prevents them from getting remunerative prices of their product and keep them in a position where they do not have access to information and technology.

- There are, however, some districts (e.g. Durg, Bilaspur, Raipur etc.) that have high infrastructure index but low productivity index or vice versa. This does not mean that infrastructure is failing to promote agricultural productivity here. There are certain reasons for the Rāther uncommon relationship- <u>First</u> In these urban centres agriculture is not the mainstay of the population and people derive their livelihood primarily from non-farm activities. Agriculture has remained neglected. <u>Second</u>, Changes have taken place in the land use pattern in the peri-urban areas of these urban- centers. The agricultural lands have been eaten up by the urban settlement pattern and expansion of cities. Those dependent on agriculture have a tendency to shift to other occupations. The government has failed to support the farmers and help them diversify in commercial crops. These could have emerged as major suppliers of vegetables in the adjoining urban centres but somehow it has not happened. Agriculture has been allowed to decay. <u>Third,</u> The status of agricultural productivity of four major crops chosen by us has been negatively affected by shift in cropping pattern as farmers have gradually shifted from low value crop to high value crop. The peri-urban areas have been able to derive a relative advantage in comparison to remote rural areas in terms of fair price and access to mandi.

- There are some districts that show strong association in terms of low range of rural urban infrastructure linkage and low level of status of agricultural productivity. These districts are Sukma, Bijapur, Gariaband, Korea, Mugeli, Balod, Surajpur, Katgora, Bemetra Narayanpur. It shows strong relationship between low range of rural-urban linkages to the low range of status of agricultural productivity. Investment in infrastructure in these districts could stimulate the growth of agriculture. Less number of organized mandis is a big hurdle in front of farming community as it is unable to sell its product and earn adequate profit. Especially perishable vegetable in season is a major concern as due to lack of road and transport connectivity former bears more losses.

## Conclusion:

Rural urban infrastructure linkages play a vital role in improvement of productivity in agriculture. Investment in the infrastructure has the potential to promote the inter-connection and exchange between rural and urban areas that can ultimately stimulate status of agriculture. The urbanization process is inevitable, irreversible and unavoidable in nature that results in changing pattern of land use. Agriculture output and productivity can be stimulated by the use

of modern inputs and raising cropping intensity. Out of 14 districts in Chhattisgarh which have low range of rural urban infrastructure linkages, 9 districts have low status of agricultural productivity which shows strong association between them. Rural areas dependent on urban centres to sell their agricultural product, derive various services i.e. health, education and derive their employment likewise from urban centres in many ways. Stronger rural urban interaction promotes status of agriculture by providing fair prices of output, availability of mandi and access to credit for modern input use. The government of Chhattisgarh should lay adequate emphasis on development of infrastructure in districts where agriculture is the main stay of population. This can not only raise the productivity of agriculture in these districts but at the same time gradually result in proliferation and establishment of manufacturing units especially ago based industries here. The working of forward and backward linkages can take even the most backward districts of the states ahead on the path of development.

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## *Dargah* Hazrat Nizamuddin Auliya: Demographic and Social Background of
## Pilgrims Zakia Akhtar*

**Introduction**

The sacred landscape is one of the prominent parts of cultural landscape. It is not necessarily based on natural phenomenon but is culturally constructed. As Sauer appropriately points out that the significance to a specific configuration of geographical features is not a self-evident fact conferred by Nature or natural processes, but Rāther a cultural appraisal (Sauer, C.O. 1952: 2-3).

Pilgrimage as defined by Stoddard (1997: 49) is an event consisting of longer than local journeys by numerous persons to a sacred place as an act of religious devotion. However in the words of Bhardwaj ―Pilgrimage is not just traversing distance, or earning merit by enduring hardship on a difficult path. Perhaps it has a deeper cosmological symbolism. While purifying themselves in the process of pilgrimage, the pilgrims consecrate the very paths by their footprints. Herein do we see the fusion of distinction between the sacred and the sanctified, the cause and the effect, the human and the divine‖ (1997:7)

*Dargahs* of Sufi saints present a significant landscape feature in the sacred topography of any region. While, all the major religions in India have their own sacred places but *Dargahs*, on the other hand, despite their being largely Islamic in nature, are considered sacred by all of them and may thus be considered multi religious in nature. In fact, their sacredness transcends the barriers of religion, caste, colour and gender. A major function of these *Dargahs*, which are considered as sacred places, is their role in the integration of plural society in countries of South Asia. In this context, Delhi occupies an important position as it has a large number of *Dargahs*.

A large number of scholars in the allied fields of history, anthropology, sociology and religious studies have produced a voluminous literature related to such studies (Arberry,A.J.1943,1950; Baldock,J.2006; Burckhardt,T.1990; Ernst, C. 2000; Eaton,R.M. 2003;Islam,R.2002;Nizami,K.A.1948,1955,1957,1980,1982,1991;Nicholson,R.A.1921;Nurba khsh,J. 1981; Subhan, J.A.1970; Trimingham,J.S. 1973). David Sopher (1968), Stoddard (1966) and S.M. Bhardwaj (1973) may be considered as pioneer geographers in the pilgrimage studies in India. While Stoddard's Ph.D. theses approach Hindu holy sites from spatial perspective, Bhardwaj's book is basically from the perspective of cultural geography. Both these scholars have produced a voluminous literature later on.

Moreover, some Indian of geographers have also done important work in this field in India (Singh, R.P.B.2013; Singh, J.P. and Khan, M. 2002; and Raza, M.1976).However, studies of Muslim sacred sites and places of pilgrimage have more or less been neglected in India. In this context it may be pointed out that studies of *Dargahs* from the geographical

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perspective started at Govt. College Ajmer where after Sunita Pachori (1986) a couple of other students produced M.A. dissertations. However, at the department of geography Jamia Millia Islamia a couple of Ph.D. theses were produced (Akhtar, Z. 2011; Nizami, A.R. 2010) and numerous papers have been published. (Akhtar, Z.2017; Nizami, A.R. 2015; Nizami, A.R. 2013; Akhtar, Z. and Khan, M. 2011; Khan, M. and Nizami, A.R. 2008; Khan, M. and Nizami, A.R. 2009; Khan, M. and Nizami, A.R. 2011; Nizami, A.R. and Khan, M 2011).

A geographical analysis of sacred *Dargahs* is of paramount importance. Although Delhi has, more than 500 *Dargahs* evolved during different historical periods but among them the following three are considered more important: *Dargah* of Hazrat Nizamuddin Auliya, *Dargah* of Hazrat Qutubuddin Bakhtiyar Kaki and *Dargah* of Hazrat Nasiruddin Chiragh Delhi. This paper deals exclusively with the *Dargah* of Hazrat Nizamuddin Auliya.

**Objective of the study**

The main objective of the study is to describe the pilgrims coming from various parts of the country and abroad. As we have already discussed elsewhere the flow of pilgrims according to distance and occasion (Akhtar, Z. 2016) here we are concerned only with the demographic and social background of pilgrims (religious composition, gender, age, education and occupation) according to distance and occasion i.e. *urs* and non-*urs*. Since Muslim sacred places have been more or less neglected in Indian Geographical Literature, this study, therefore, tries to fill this gap.

**Data and Method**

The study is based exclusively on the primary data collected from the field. Having gone through the literature we prepared a schedule to be canvassed during our fieldwork. Realizing the problem of collecting data from pilgrims, we kept the schedule to a minimum size. Therefore, we decided to take only 400 samples, and further bifurcated those on the basis of occasion i.e. *urs* and non-*urs*. Although pilgrims visit *Dargah* throughout the year but at the time of *urs* the congregation becomes large. Therefore, we canvassed about 50% samples at the time of *urs*, which lasts for 5 days. The survey was conducted in the year 2009. Moreover, the remaining 50% samples were collected during different months of the same year. It took two to three months to collect data in different intervals during the entire year. During the *urs* days only 25-30 samples were collected per day. However, during the non-*urs* days the collection of samples almost doubled i.e.60-70 samples per day. Our sampling procedure may be termed as purposive random sampling. Although it was kept in mind that people from different parts of the country are included.

It needs emphasis that though we are describing the pattern of distribution according to distance we are deliberately avoiding the use of concept of distance decay. Since the philosophy and concept of pilgrimage is based intensely on the personal emotions it defies all such rules.

## Spatial Distribution of Samples

Although the devotees are present throughout the year but the inflow reaches its peak during the annual *Urs*. Fortunately, *urs* was the major occasion for the assemblage of large number of pilgrims but during the recent years, the flow of the devotees has increased many folds throughout the year. Moreover, during most parts of the year the private guesthouses, hotels and accommodations in the vicinity of *Dargah* are occupied to their full capacity.

### Table 1: Spatial Distribution of Sample Pilgrims by Occasion

| State | Persons | Non-Urs | Urs | Non-Urs% | Urs % |
|---|---|---|---|---|---|
| Afghanistan | 01 | 00 | 01 | 00% | 0.5% |
| Andhra Pradesh | 04 | 00 | 04 | 00% | 0.5% |
| Bangladesh | 02 | 00 | 02 | 00% | 01% |
| Bihar | 04 | 00 | 04 | 005 | 02% |
| Chandigarh | 01 | 01 | 00 | 0.5% | 00% |
| Delhi | 288 | 155 | 133 | 77.5% | 66.5% |
| Gujarat | 03 | 03 | 00 | 1.5% | 00% |
| U.K. | 02 | 00 | 02 | 00% | 1% |
| Haryana | 04 | 02 | 02 | 1% | 1% |
| Jammu & Kashmir | 04 | 01 | 03 | 0.5% | 1.5% |
| Karnataka | 02 | 01 | 01 | 0.5% | 0.5% |
| Madhya Pradesh | 06 | 02 | 04 | 1% | 2% |
| Maharashtra | 01 | 00 | 01 | 00% | 0.5% |
| Orissa | 01 | 01 | 00 | 0.5% | 00% |
| Pakistan | 11 | 05 | 06 | 2.5% | 3% |
| Rajasthan | 04 | 02 | 02 | 1% | 2% |
| Tamil Nadu | 01 | 00 | 01 | 00% | 0.5% |
| United Kingdom | 01 | 1 | 00 | 0.5% | 00% |
| Uttar Pradesh | 41 | 16 | 25 | 8% | 12.5% |
| Uttaranchal | 03 | 02 | 01 | 1% | 0.5% |
| West Bengal | 14 | 08 | 06 | 4% | 3% |
| Uzbekistan | 01 | 00 | 01 | 00% | 0.5% |
| Indonesia | 01 | 00 | 01 | 00% | 0.5% |
| Total | 400 | 200 | 200 | 100% | 100% |

A close perusal of the table 1 showing the number of pilgrims during urs and non-urs days reveals that besides pilgrims from various other countries like Bangladesh, Afghanistan,

Figure No. 1

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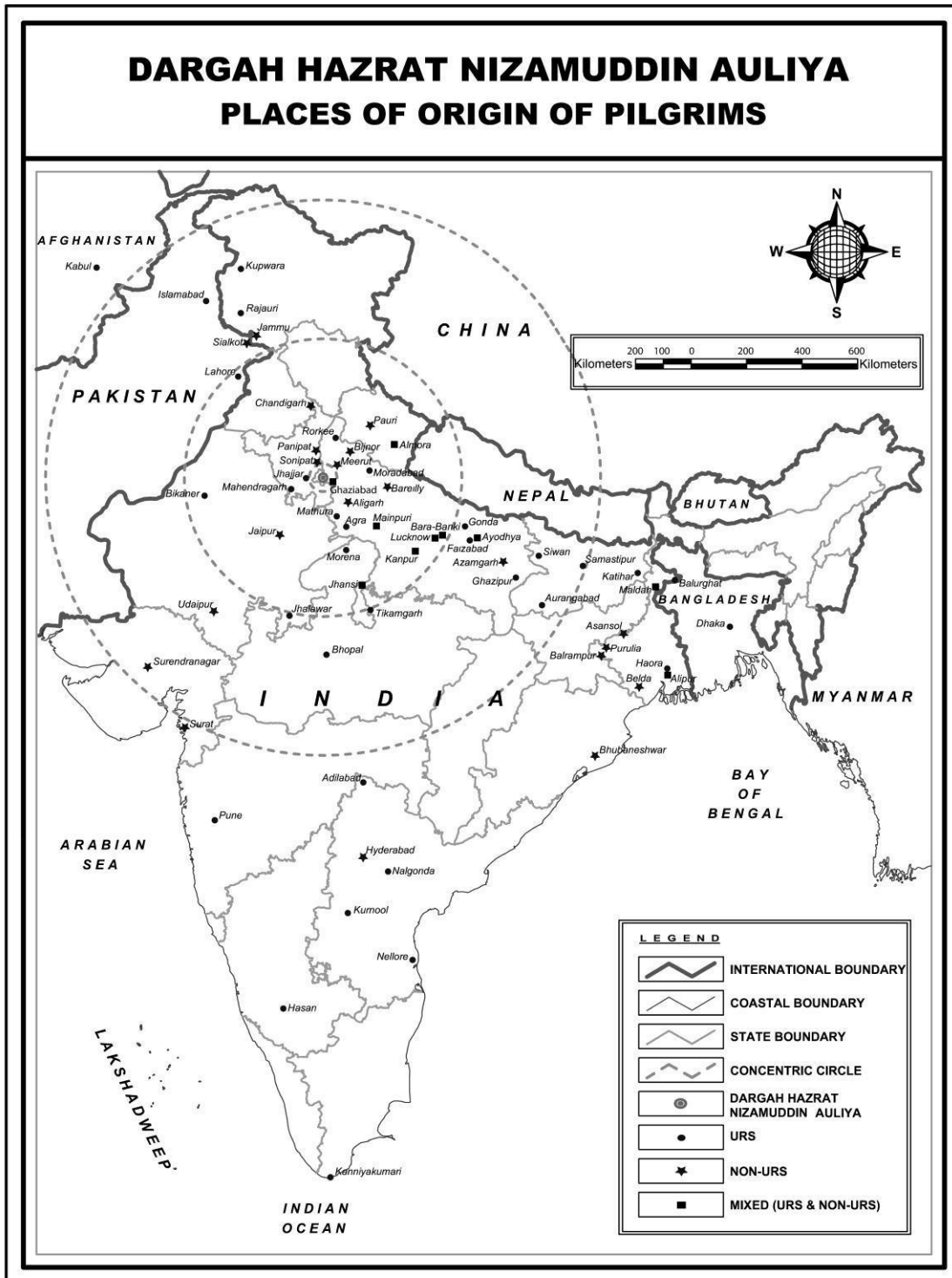
Pakistan, United Kingdom, Uzbekistan and Indonesia come to pay homage to Mehboob-e-Ilahi. Despite the visa problems fine number of Pakistanis were found during the urs days. Another major characteristic of the samples is that most of the states of our country are represented however; there is enough variation in the percentage in the pilgrims during the urs and non-urs days.

Since the data was having extremely skewed pattern it was not proper to divide the distance uniformly. Hence we have taken non-uniform distance bands of < 5, 5-10, 10-15, 15-50, 50-500, 500-1000 and > 1000 kms. categories so that the place of origin of pilgrims may be described more accurately.

A close perusal of the fig.1 reveals that pilgrims to *Dargah* Hazrat Nizamuddin come from a number of places belonging to the far flung areas of the country and also beyond. Since the number of pilgrims from foreign countries (except South Asia) is insignificant we have not mentioned them on the map.

**Demographic and Social Background of Pilgrims**

One of the chief characteristics of any sacred place is associated with its power to attract pilgrims. In this context, Delhi occupies an important position as it has a large number of *Dargahs*.

In this section, we have discussed the demographic and socio-economic parameters of the samples. However, it may be pointed out that all these parameters have been analyzed from the perspective of occasion of pilgrimage that is *urs* and non-*urs* and the distance which the pilgrims have covered to arrive at *Dargah* Hazrat Nizamuddin Auliya.

**Religion**

Religion is considered to be the most significant factor in attracting pilgrims as devotees of a particular faith. Table 2 shows the religion wise composition of pilgrims during *urs* and non-*urs* days. It may be emphasized that our sample consists by and large of Muslims (60%) and Hindus (38.5%). The percentage of Christians (1.25%) and Sikhs is relatively insignificant (0.25%). If we look at the data occasion wise we find that on non-*urs* days Muslims were maximum (56.5%) and Sikh were minimum (0.5%). Whereas on *urs* days also Muslims were maximum (63.5%) but Christians were minimum (1.5%) to visit the dargah. But the interesting fact is that Hindus visited the dargah maximum (42%) on non-*urs* days as compared to *urs* days (35%).

## Table 2: Religion of Pilgrims according to Occasion

| Occasion | | Religion | | | | Total |
|---|---|---|---|---|---|---|
| | | Christian | Hindu | Muslim | Sikh | |
| Non-*urs* | No. | 2 | 84 | 113 | 01 | 200 |
| | % | 1% | 42% | 56.5% | 0.5% | 100.0% |
| *Urs* | No. | 3 | 70 | 127 | - | 200 |
| | % | 1.5% | 35% | 63.5% | - | 100.0% |
| Total | No. | 5 | 154 | 240 | 01 | 400 |
| | % | 1.25% | 38.5% | 60% | 0.25% | 100.0% |

### Table 3: Religion of Pilgrims according to Distance

| Distance (in kms) | | Religion | | | | Total |
|---|---|---|---|---|---|---|
| | | Christian | Sikh | Hindu | Muslim | |
| **< 5** | **No.** | **00** | **00** | **14** | **29** | **43** |
| | **%** | **00%** | **00%** | **32.5%** | **67.5%** | **100%** |
| **05-10** | **No.** | **00** | **01** | **73** | **100** | **174** |
| | **%** | **00%** | **0.6%** | **41.9%** | **57.5%** | **100%** |
| **10-15** | **No.** | **01** | **00** | **19** | **34** | **54** |
| | **%** | **1.8%** | **00%** | **35.2%** | **63%** | **100%** |
| **15-50** | **No.** | **00** | **00** | **09** | **12** | **21** |
| | **%** | **00%** | **00%** | **43%** | **57%** | **100%** |
| **50-500** | **No.** | **00** | **00** | **24** | **26** | **50** |
| | **%** | **00%** | **00%** | **48%** | **52%** | **100%** |
| **500 —1000** | **No.** | **00** | **00** | **08** | **12** | **20** |
| | **%** | **00%** | **00%** | **40%** | **60%** | **100%** |
| **> 1000** | **N0.** | **00** | **00** | **15** | **23** | **38** |
| | **%** | **00%** | **00%** | **39.5%** | **60.5%** | **100%** |
| **Total** | **No.** | **05** | **01** | **154** | **240** | **400** |
| | **%** | **1.25%** | **0.25%** | **38.5%** | **60%** | **100%** |

Table no. 3 shows the religion of pilgrims with respect to different distance bands. Since the total number of Christians (1.25%) and Sikhs (0.25%) is insignificant we are comparing only the Muslims (60%) and Hindu (38.5%) pilgrims. The proportion does not change much according to distance bands with the exception of fifth one where Muslim pilgrims are 52%. Similarly, in the first band the percentage of Muslim pilgrims reaches upto 67.5%. In the case of Hindu pilgrims, the curve rises upto fifth band and then it tapers down. On the other hand the curve of Muslim pilgrims attained its peak in the first band and takes a downward bulge except in the fifth distance band.

On the basis of above discussion we can fairly conclude that although the shrine attracts pilgrims of both the major religions (Hindus and Muslims) but the proportions of Muslims is obviously higher.

**Gender**

Pilgrims participation is dominated by male population for their economic and cultural independence which is less favorable in case of female population. It applies universally in all walks of life ranging from migration to travel habits and so is also evident in this case.

A close look at the table 4 shows that although male percentage accounts for 56.75% of pilgrims but there is not much difference in this ratio with reference to occasion of visits that is during *urs* and non-*urs* days.

**Table 4: Gender of Pilgrims according to Occasion**

| Occasion | | Gender | | Total |
|----------|------|--------|------|-------|
| | | Female | Male | |
| **Non-*urs*** | No. | 86 | 114 | 200 |
| | % | 43% | 57% | 100.0% |
| *Urs* | No. | 87 | 113 | 200 |
| | % | 43.5% | 56.5% | 100.0% |
| **Total** | No. | 173 | 227 | 400 |
| | % | 43.25% | 56.75% | 100.0% |

A close perusal of the gender wise composition of pilgrims according to distance (Table 5) reveals that total male percentage of pilgrims accounts for 56.75%) of the total. The highest percentage (59.2%) of males lies in the second and third belts. On the other hand, in case of females the highest percentage (46) lies in the first belt.

**Table 5: Gender of Pilgrims according to Distance**

| Distance (in kms) | | GENDER | | Total |
|-------------------|------|--------|------|-------|
| | | Female | Male | |
| **< 5** | No. | 24 | 19 | 43 |
| | % | 55.8% | 44.2% | 100% |
| **5 – 10** | No. | 71 | 103 | 174 |
| | % | 40.8% | 59.2% | 100% |
| **10 – 15** | No. | 22 | 32 | 54 |
| | % | 40.8% | 59.2% | 100% |
| **15 – 50** | No. | 09 | 12 | 21 |
| | % | 42.9% | 57.1% | 100% |
| **50 – 500** | No. | 23 | 27 | 50 |
| | % | 46% | 54% | 100% |
| **500 – 1000** | No. | 10 | 10 | 20 |
| | % | 50% | 50% | 100% |
| **>1000** | No. | 14 | 24 | 38 |
| | % | 36.8% | 63.2% | 100% |
| **Total** | No. | 173 | 227 | 400 |
| | % | 43.3% | 56.7% | 100% |

**Age**

Age of the pilgrims plays an important role in the decision of undertaking the pilgrimage for many counts like his/her economic independence, social hierarchy in the family, ability to withstand the odds associated with travel aspirations related to worldly matters and salvation.

Table 6 shows that during the non-*urs* days the lowest percentage (3) lies in the last age group (above 60 years), whereas, the maximum percentage (36) lies in the age group of 30-40 years. During the *urs* days the maximum percentage (40) of pilgrims is in the age group of 30-40 years, and the minimum percentage (3.5) lies in the age group of above 60 years. More or less the similar findings may be observed in the total pilgrims wherein the maximum percentage (38) lies in the age group of 30-40 years and the minimum percentage (3.25) in the age group of above 60 years.

**Table 6: Age of Pilgrims according to Occasion**

| Occasion | | Age | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | < 30 | 30 - 40 | 40 - 50 | 50 - 60 | > 60 | |
| **Non-*urs*** | No. | 61 | 72 | 51 | 10 | 06 | 200 |
| | % | 30.5% | 36% | 25.5% | 5% | 3% | 100.0% |
| *Urs* | No. | 44 | 80 | 54 | 15 | 7 | 200 |
| | % | 22% | 40% | 27% | 7.5% | 3.5% | 100.0% |
| **TOTAL** | No. | 105 | 152 | 105 | 25 | 13 | 400 |
| | % | 26.25% | 38% | 26.25% | 6.25% | 3.25% | 100.0% |

Age composition of pilgrims according to the distance bands (Table 7) shows that maximum number of pilgrims (38%) belong to the age group of 30-40 years while the minimum (3.25%) are from the last group (more than 60 years). Looking from the perspective of individual distance bands it shows that in the first band there is decline in the percentage of pilgrims with increase in the age groups except in the fourth age group where it rises. In the second distance band the peak lies in the age group of 40-50 (35.1%) and the curve becomes more undulating. In the third band the percentage of pilgrims has attained the peak in the age group of 30-40 years and then decreases. In the next band (15-50 kms) the peak again lies in the second age group of 30 – 40 years (47.6%) and then the curve takes a downward slope. In the distance band of 50 - 500 kms the proportion is similar with the fourth distance band. Similar trend may be observed in the second last two distance bands.

**Table 7: Age of Pilgrims according to Distance**

| Distance (in kms) | | Age | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | <30 | 30 - 40 | 40 – 50 | 50 - 60 | > 60 | |
| < 5 | No. | 20 | 08 | 06 | 09 | 00 | 43 |
| | % | 46.5% | 18.7% | 13.9% | 20.9% | 00% | 100.0% |
| 5 – 10 | No. | 45 | 55 | 61 | 08 | 05 | 174 |
| | % | 25.8% | 31.6% | 35.1% | 4.6% | 2.9% | 100.0% |
| 10 – 15 | No. | 18 | 24 | 10 | 02 | 00 | 54 |
| | % | 33.3% | 44.5% | 18.5% | 3.7% | 00% | 100.0% |
| 15 – 50 | No. | 05 | 10 | 04 | 01 | 01 | 21 |
| | % | 23.8% | 47.7% | 19.1% | 4.7% | 4.7% | 100.0% |
| 50 – 500 | No. | 13 | 20 | 10 | 02 | 05 | 50 |
| | % | 26% | 40% | 20% | 4% | 10% | 100.0% |
| 500 – 1000 | No. | 03 | 10 | 05 | 01 | 01 | 20 |
| | % | 15% | 50% | 25% | 5% | 5% | 100.0% |
| > 1000 | N0. | 01 | 25 | 09 | 02 | 01 | 38 |
| | % | 2.6% | 65.9% | 23.7% | 5.2% | 2.6% | 100% |
| TOTAL | No. | 105 | 152 | 105 | 25 | 13 | 400 |
| | % | 26.2% | 38% | 26.2% | 6.25% | 3.3% | 100.0% |

## Education

The prime aim of education is to develop the overall personality of a person and thus educational attainment in a way reflects the level of development of a person. In the present context looking at educational attainment of pilgrims is relevant to visualize the configuration of devotees in the light of their developmental status.

Table 8 shows the number of percentage of pilgrims according to their educational levels at the time of *urs* and non-*urs* days. During *urs* days the highest percentage (34.5) consists of graduate pilgrims. More or less similar is the case for the total number of pilgrims (31.5%). During the non-*urs* days again the highest percentage consists of graduates (28.5%) followed by senior secondary (26.5%).

### Table 8: Education of Pilgrims according to Occasion

| Occasion | | EDUCATION | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | Middle | Senior Secondary | Graduate | Post Graduate | Uneducated | |
| Non-*urs* | No. | 47 | 53 | 57 | 17 | 26 | 200 |
| | % | 23.5% | 26.5% | 28.5% | 8.5% | 13% | 100.0% |
| *Urs* | No. | 50 | 39 | 69 | 14 | 28 | 200 |
| | % | 25% | 19.5% | 34.5% | 7% | 14% | 100.0% |
| total | No. | 97 | 92 | 126 | 31 | 54 | 400 |
| | % | 24.25% | 23% | 31.5% | 7.75% | 13.5% | 100.0% |

A close perusal of the table 9 showing educational levels of pilgrims with reference to distance reveals that the highest percentage consists of graduate persons (31.5%) followed by middle school (24.2%). However, if we look it from the perspective of distance bands one can find that most of the devotees (43.5%) come to the *Dargah* in the distance band of 5-10 kms. whereas, minimum numbers (5%) visited the shrine in the distance band of 500-1000km. If we go through all the distance bands we see that in the first band of less than 5 km maximum pilgrims who visited the *Dargah* were senior secondary educated (44.2%) and minimum number of pilgrims were middle school pass (16.3%). In the second distance band of 5-10 kms the maximum and minimum percentage was of graduates (33.3%) and post graduates (3.4%).In the distance band of 10-15 kms graduates were maximum (40.7%) and uneducated persons were minimum (3.7%).In the fourth distance band of 15-50 kms we again find maximum pilgrims (38.1%) consist of graduates and minimum of postgraduates (4.7%). Moving towards the distance band of 50-500 kms the maximum pilgrims (30%) were middle pass whereas minimum were postgraduates (6%). In the second last band of 500-1000kms both middle pass (25%) and uneducated (25%) were having maximum and both postgraduates (15%) and senior secondary pass (15%) were having minimum percentage to visit the *Dargah*. Lastly, in the distance band of >1000kms most of the pilgrims (39.7%) were graduates and only (13.2%) were senior secondary.

### Table No. 9: Education of Pilgrims according to Distance

| Distance (kms) | | Education | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | Middle | Senior Sec. | Graduate | Post Grad. | Uneducated | |
| < 5 | No. | 07 | 19 | 10 | 07 | 00 | 43 |
| | % | 16.3 | 44.2 | 23.2 | 16.3 | 00 | 100.0 |
| 5 – 10 | No. | 45 | 40 | 58 | 06 | 25 | 174 |
| | % | 25.9 | 23 | 33.3 | 3.4 | 14.4 | 100.0 |
| 10 – 15 | No. | 15 | 10 | 22 | 05 | 02 | 54 |
| | % | 27.8 | 18.5 | 40.7 | 9.3 | 3.7 | 100.0 |
| 15 – 50 | No. | 04 | 06 | 08 | 01 | 02 | 21 |
| | % | 19 | 28.7 | 38.1 | 4.7 | 9.5 | 100.0 |
| 50 -500 | No. | 15 | 09 | 09 | 03 | 14 | 50 |
| | % | 30 | 18 | 18 | 6 | 28 | 100.0 |
| 500–1000 | No. | 05 | 03 | 04 | 03 | 05 | 20 |
| | % | 25 | 15 | 20 | 15 | 25 | 100.0 |
| > 1000 | No. | 06 | 05 | 15 | 06 | 06 | 38 |
| | % | 15.7 | 13.2 | 39.7 | 15.7 | 15.7 | 100.0 |
| TOTAL | No. | 97 | 92 | 126 | 31 | 54 | 400 |
| | % | 24.2 | 23 | 31.5 | 7.7 | 13.5 | 100.0 |

## Occupation

Making of livelihood and pursuing a particular path of spiritual order are interwoven aspects of one's life. It is observed that people from all walks of life pay their reverence at the *Dargah* of Hazrat Nizamuddin Auliya starting from labourers to cultivators or engaged in businesses and services.

Table 10 shows the occupational structure of pilgrims on the basis of occasion of pilgrimage i.e. *urs* and non-*urs*. We are ignoring the category of farmers and unemployed persons whose percentage is too insignificant. Among the other categories the highest

percentage (30%) is of businessmen who visited the *Dargah* of Hazrat Nizamuddin on *urs* and non-*urs* days more frequently.

## Table 10: Occupation of Pilgrims according to Occasion

| Oc casi on | | OCCUPATION | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Business man | Employee | Farme r | House wife | Laboure r | Student | Unemplo yed | |
| Non-*urs* | N o | 57 | 54 | 01 | 44 | 20 | 21 | 03 | 200 |
| | % | 28.5 | 27 | 0.5 | 22 | 10 | 10.5 | 1.5 | 100.0 |
| *Urs* | N o . | 63 | 49 | 04 | 49 | 09 | 23 | 03 | 200 |
| | % | 31.5 | 24.5 | 2 | 24.5 | 4.5 | 11.5 | 1.5 | 100.0 |
| Tota l | N o . | 120 | 103 | 05 | 91 | 29 | 44 | 06 | 400 |
| | % | 30 | 25.7 | 1.25 | 22.7 | 7.25 | 11 | 1.5 | 100.0 |

Table 11 shows the occupational structure of pilgrims with reference to distance bands. As we have divided the distance covered by pilgrims into 7 distance bands which starts with the distance of less than 5 kms it is found that most of the people in this band were employees (76.7%) and lesser no. of pilgrims were housewives (4.6%) and businessman (4.6%).In the second distance band of 5-10kms businessman (34.5%) mostly visited the *Dargah* and the unemployed persons were minimum (1.1%). Likewise, in the third distance band of 10-15 kms maximum persons were employees (27.7%) and the *Dargah* was less visited by farmers (3.7%). Similarly, in the fourth distance band of 15-50 kms most of the people who visited the *Dargah* were employees (47.6%) and whereas housewives were the least (14.4%). The previous trend changes as we move towards the distance band of 50-500 kms which also shows the places outside Delhi. In this band the highest percentage belongs to pilgrims businessman (30%) and minimum of employees (20%). In the second last band of 500-1000 kms most of the pilgrims again were businessman (35%) along with housewives (35%) and the minimum numbers belong to labourers (10%). In the last distance band of more than 1000 kms it has been found that again mostly businessman (21%) visited the *Dargah* and labourers and students both were among those who least visited persons (2.6%).

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**Table 11: Occupation of Pilgrims according to Distance**

| Distance (in kms) | | Occupation | | Total | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Businessman | Employee | Farmer | Housewife | Labourer | Student | Unemployed | |
| < 5 | No. | 02 | 33 | 03 | 02 | 00 | 03 | 00 | 43 |
| | % | 4.6 | 76.7 | 07 | 4.6 | 00 | 07 | 00 | 100 |
| 5– 10 | No. | 60 | 34 | 08 | 20 | 16 | 24 | 02 | 174 |
| | % | 34.5 | 19.5 | 4.7 | 11.5 | 14.9 | 13.8 | 1.1 | 100 |
| 10 – 15 | No. | 07 | 15 | 02 | 11 | 03 | 12 | 04 | 54 |
| | % | 13 | 27.7 | 3.7 | 20.3 | 5.5 | 22.2 | 7.4 | 100 |
| 15 – 50 | No. | 04 | 10 | 00 | 03 | 00 | 04 | 00 | 21 |
| | % | 19 | 47.6 | 00 | 14.4 | 00 | 19 | 00 | 100 |
| 50 – 500 | No. | 15 | 10 | 00 | 14 | 11 | 00 | 00 | 50 |
| | % | 30 | 20 | 00 | 28 | 22 | 00 | 00 | 100 |
| 500 – 1000 | No. | 07 | 04 | 00 | 07 | 02 | 00 | 00 | 20 |
| | % | 35 | 20 | 00 | 35 | 10 | 00 | 00 | 100 |
| > 1000 | No. | 08 | 07 | 00 | 07 | 01 | 01 | 00 | 38 |
| | % | 21 | 18.4 | 00 | 18.4 | 2.6 | 2.6 | 00 | 100 |
| Total | No. | 120 | 103 | 00 | 91 | 29 | 44 | 06 | 400 |
| | % | 30 | 25.7 | 00 | 22.7 | 7.25 | 11 | 1.5 | 100 |

## Conclusion

From the above description it can be fairly concluded that according to occasion most of the Muslim pilgrims (60%) visited the *Dargah* followed by Hindus (38.5%) on both the occasions of *urs* and non-*urs*. Similarly according to distance most of the pilgrims visited the shrine in the distance band of 5-10 kms. Whereas, according to gender male pilgrims percentage accounted for 56.75% on both the occasions of urs and non-urs. But, according to distance most of the female pilgrims visited the *Dargah* from the first distance band (<5 kms) and male pilgrims visited the *Dargah* from within 15 kms of distance.

However, when we look at the data according to age the maximum percentage of pilgrims (36%) who visited the *Dargah* has the age group of 30-40 years and decreases as age increases (>60 yrs.). Likewise, if we see the age composition of pilgrims according to the distance bands most of the pilgrims came to *Dargah* within 5-10 kms of reach.

The educational status of the pilgrims reveals that the highest percentage consists of graduate pilgrims on both urs and non-urs days and that too in the distance band of 5-10 kms.

The occupation wise distribution of pilgrims according to occasion reveals that on both *urs* and non-*urs* days the businessman visited the *Dargah* of Hazrat Nizamuddin more than

the others. However, according to distance employees visited the *Dargah* maximum in the distance band of <5 km.

The main purpose of this paper is to draw attention to religious travel undertaken by pilgrims to *Dargah* Hazrat Nizamuddin Auliya. Pilgrimage to the shrine is undertaken as a matter of individual consent, obligation and conviction, not as a result of religious command. Individual emotions predominate. Perceptible religious diversity Rāther than total uniformity prevails as non-Muslims also come to these *Dargahs*. No wonder then that such places have become the symbols of syncretism.

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## Diversity of Fish Fauna
## A Case Study of Rajnandgaon District, Chhattisgarh (India)
### *Dr. Sanjay Thiske*
### *Abstract*

The evolutionary processes of fishes, being guided by environmental and genetic factors have resulted in its charming diversity. There for, study of fish fauna diversity at the micro level would unravel some remarkable facts about its vivid order family and species existing in the near past and in the present. Keeping this in mind the topic entitled "Diversity of Fish Fauna. A Case Study of Rajnandgaon District, Chhattisgarh (India)" has been chosen as a problems for investigation at this stage. The study is a part of minor research project to be sanctioned by the autonomous cell of the college. It is fully based on primary data generated through field observation and structured questioner. Analytical method has been used to draw inferences.

The study reveals that this small region is rich in fish fauna diversity as one finds 7 orders, 17 families and 43 species of fishes. Cypriniformis dominates the orders of the fishes, whereas it is cyprinidae which is the dominants family. It is also noted that the most common fishes in this region are *Labeo rohita, Catla-catla, Wallage attu*, *puntius, Mastcembelus* sp., *Clarius batrichus*, Grass carp, Silver carp, Channa punctatus, and Piranha. It has been reported that the fishes which are numbered, are included in the threatened category.

**Key Words: Shivnanth River, Rjnandgaon, Fish Fauna, Diversity**

## Introduction

Fishes have been playing a vital role not only in the ecosystem but also as a food supplement for the human all over the time and space. Once there were uncountable number of species, but today most of them have disappeared. Even their quantity has also declined alarmingly. This has drawn the attention of both the government and non-government organization. Department of fish and fisheries has established separately. **Central Board of Fisheries (CBF)** introduced the word "Fisheries" for the fish production which uses of modern techniques in fisheries sector. Fisheries has grown as a sunrise sector with varied resources and potential which is engaging over 14.50 million people in India at the primary level and many more along the value chain. Constituting about 6.30% of the global fish production and 5% of global trade, India has attained second position in both fish production and Aquaculture nation in the world. (Ministry **of Agriculture and Farmers Welfare Department of Animal Husbandry, Dairying & Fisheries) (2011).**

The vision of Blue Revolution has created an induced environment for integrated development of full potential of fisheries of the country. It has also taken care of the aspects

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of substantial improvement in the income status of fishermen and fish farmers, on the one hand, and the sustainability, bio-security and environmental concerns on the other.

The fishes of the world are of varied nature in terms of body features, colourations and sense organs. This due to the geographical conditions in which they originate and grow. These conditions also determine their magnitude. That's why fishes of tropical land are quite distinct from that of the temperate and cold areas. Since tropical climate is further divided into four sub regions *viz*. Equatorial, Monsoon, Savanna and Hot Desert (Koeppen V., 1936). The tropical monsoon climate is characterized by scorching summer season followed by rainy session and harsh winter season. During the rainy season rivers, nalas and ponds overflow due to heavy rainfall in the eastern part. This also causes submergence of low-lying areas which look likes sea. opposed to it the hot summer season experiences no rain thereby resulting in dryness of numerous rivers, nalas, ponds, streams and low lying areas. Even during the winter season most of these water bodies contain much less water. In such a climatic condition, variety of fishes is found in abundance for a small period of time whereas fish species and its quantity get drastically reduced during most of the time. Human factors like encroachment of water bodies, its pollution and unscientific way of fishing also seem to play remarkable role in the reduction of their species and volume.

Keeping the above problem in mind, fish fauna diversity has been chosen for micro level research by taking up Rajnandgaon District of Chhattisgarh India, as a case study. The study area is largely inhabited by backward and tribal people which sizable section is directly and indirectly related with fishes.

The aim of the present work is to fill a knowledge gap on the diversity status of fish fauna of the selected blocks of Rajnandgaon district and its identification. Maintained record of rare non-commercial fish species, endangered fishes. Same work done by Beata Wiecaszek et.al 2015 and Uttam kumar Sarkar *et.al*.2013.

## Objective

Objective of the study is drawn from the introduction of the Problem however it needs it listing for better clarity so that the study is focused on it. The only objective of this study is the following.

- **To find out nature and degree of fish fauna diversity.**

## Materials and Methods

Sampling and data collection were done for one year June 2016 to may 2017. Two traverse have been selected for the field survey; first is Aundhi to Rajnandgaon in the southern and second is Rajnandagon to Gandai in the northern part of the district. Observation method has been applied to note down variety of fishes caught and brought by the fishermen for selling local hats and bazaar along this traverse.

.        Fish species were collected with the help of local fishermen and the tribal people at various locations. The specimens were preserved in 5% formalin, morphological measurement with the help of fishes of UP and Bihar by Gopal Ji Shrivastva (2010) and the fresh water fishes of India , Pakistan, Bangaladesh, Burma and Sri Lanka - A Hand Book by K.C. Jayram.1994(*Edited by the Director, ZoologicaZ Survey oj India, Oalcutta*). Species Diviersity of fishes are measured the following method. Sunita Bakawale and Kanhere R.R. (2013)

**Study Area:**

Chhattisgarh state (CG) state is situated in the central South East region of India between 21.2787° N, 81.8661° E with 135,198 km². ist of major rivers flowing in the state are Mahanadi, Shivnati , Godavari, Indravati, Hasdeo and Son River. Almatti Dam Bilsspur , Khuntaghat Bilaspur, Gangrel Dam Dhamtari, Tandula Dam  Durg, Bango Dam Korba, Mohara Dam Rajnandgaon. Chhattisgarh state has rich flora and fauna. The Recorded forest area in Chhattisgarh is 59,772 km2 which is 44.21% of its geographical area. Numbers of small rivers, large ponds small ponds and streams are found in the forest region.

The study area falls in the tropical monsoon climate. Its most of the rivers are seasonal excepting Sheonath River. Even the ponds and dams almost get dry during the summer season. The Sheonath River presents small and big patches of pool of waters. Its bed is stony in nature. But it overflows during the rainy season. In this season variety of fishes from downstream riches not only to its source area is including tributaries, nalas and ponds and low lying fields. Thus both volume and varieties of fishes increased; the abundance of fishes in this period and its rareness during the summer season attracters the researchers to take up a thorough study as it not only provides livelihood to fish catchers and its sellers but also provides reach source of protein to its consumers. The area of research in this region is virgin.

Rajnandgaon is district of Durg Division. Its lies between $21^{o}.09'$ N to $22^{o}.15'$N, $81^{o}.03'$ to $81^{o}.55'$ E. (**Fig.1**). Thousands of small and large pond, nalas, small rivers and one major big river Sheonath has been water resources for the peoples of Rajnandgaon. Among the above mentioned water resources many are perennial and annual. This very important fact the socio economic status of village population and urban population has been depend on the available water resources, which are nearby. Fish marketing is one most important small scale industry for the urban and rural peoples. Especially it has been seen during weekly hat and bazaar in villages; find different varieties of small and large fishes. The monitoring surveys and identification oriented to common fishes, endangered and non- commercial fishes species which are observed during the study. Rapid degradation and serious threats of aquatic biodiversity has been seen in Indian scenario.

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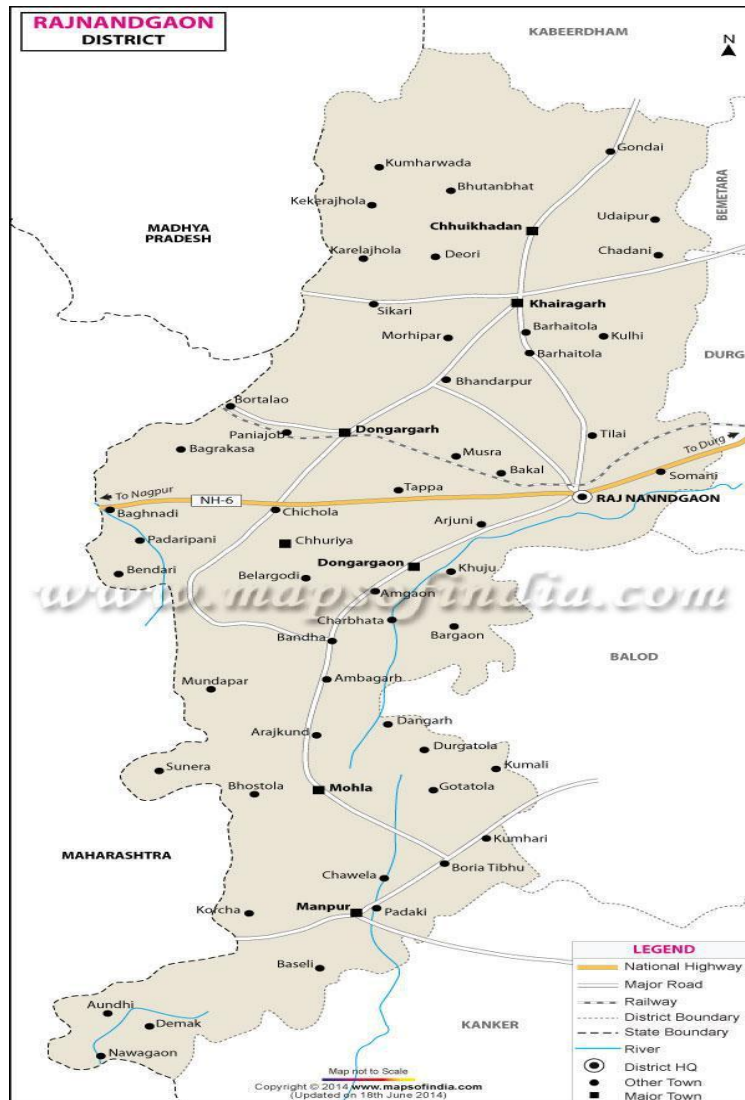


**Fig. 1 Study Area showing traverse**

Total area of the district is 8070.25 sq. Kms. The district has been divided geographically into three parts viz. (1) the western hilly area,, (2) The South plateau and (3) the plain area of Eastern part. The major important river of the district is Sheonath River which is a tributary of Mahanadi. It originates from Kothgul (Garh Chirouli District of Mahrarshtra State) from Panabaras Plateau and flows to north east direction. In addition, there are Amner, Ponk, Bhumaria, Karra, Pari, Tairi and Hump rivers which are tributaries of Sheonath and they flow towards East. Mohara, Bargaon, Aundhi, Salebara and Matiamoti area the main water reservoir of the distric.

## Result:

During the field observation and according to respondents recorded 43 species (table -1) were identified, comprising 31 genera and 17 families. In above table mentioned their local, scientific name and families. The present species reveals the orders cypriniformes and family cyprinidae are dominant which are contain total 17 species and order Osteoglossiformes ,Beloniformes and Characiformes less numbers of fishes both order has contain only 1 species. While order Siluriformes, Perciformes and Synbranchiformes have respectively 12,7 and 3 fish species.

### Table 1. Nature and Degree of Fish Fauna Diversity (Jun-2016 to May 2017).

| Orders | Family | Genera | Species | Local name |
|--------|--------|--------|---------|------------|
| Osteoglossiformes | Notopteridae | Notopterus | *N. notopterus* | Patola |
| Cypriniformes | Cyprinidae | *Amblypharyngodon* | *A. mola* | Mohral |
| | | Catla | *C.catla* | Catla |
| | | Cirrhinus | *C.mrigala* | Mrigal |
| | | Cirrhinus | *C.reba* | Borai |
| | | Garra | *G.gotyla* | Butuwa |
| | | Labeo | *L. bata* | Bata |
| | | | *L. calbasu* | Kamach |
| | | | *L. Rohita* | Rohu |
| | | Puntius | *P. Sarana* | Kotra |
| | | Puntius | *P. Ticto* | Kotri |
| | | | *P. Sophor* | Sidhari |
| | | Rasbora | *R.daniconius* | Dadhi |
| | | Hypophthalmichthys | *H.Molitrix* | Big head |
| | | *Ctenopharyngodon* | *C. idella* | Grass carp |
| | | *Cyprinus* | *C. Carpio* | Komal karp |
| | | Crossocheilus | *C. oblongus* | Not known |
| | | Salmostoma | *S. bacaila* | Chela |
| | Cobitidae | *Lepidcephalichthgy* | *L.guntea* | Rudwa |
| | Namacheilidae | *Nemacheilus* | *N.botia* | Rudwa |

| Silurifo rmes | Silurida e | *Ompak* | *O. pabda* | Bolia |
|---|---|---|---|---|
| | | | *O.bimacul atus* | Jalkapoo r |
| | | Wallago | *W.attu* | Padhina |
| | Bagrid ae | Mystus | *M.tengara* | Tengna |
| | | | *M.cavasiu s* | Tengna |
| | | | *M.aor* | Singar |
| | | Rita | *R.rita* | Marad |
| | Hetero pneusti dae | Heteropneust es | *H. fossilis* | Singhi |
| | Pangasi idae | Pangasius | *P.* Pangasius | Padhina |
| | Clariida e | Clarias | *C.battrach us* | Mongri |
| | | Clarias | *C.gariepin us* | Thai Mangur |
| Percifo rmes | Channi dae | Channa | *C.gachua* | Birju |
| | | | *C.punctatu s* | Khoksi |
| | | | *C.striata* | Bhunda |
| | Anaban tidae | Anabas | *A. testudineus* | Kenvai |
| | Gobiida e | Glossogobius | *G.giuris* | Khasadd a |
| | Cichlid ae | Oreochromis | *O.mossam bicus* | Tilapia |
| | Ambass idaevas sidae | Chanda | *C. Nama* | Chanda |
| Synbra nchifor mes | Synbra nchidae | Amphipnous | *A.cuchia* | Tudum |
| | Mastac embelid ae | Macrognathus | *M.aculeat us* | Jat bami |
| | Mastac | Macrognathus | *M.armatus* | Bam |

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| | embelid ae | | | |
|---|---|---|---|---|
| Belonif ormes | Belonid ae | Xenethodo | *X. cancila* | Kauwa |
| Characi formes | Serrasal midae | Pygocentrus | *P.natterei* | Roop - Chanda |

**Source : based on field survey ,2017**

**Table 2 Distribution of Species by family of fishes 2017**

| Sr. No. | Family | No. of Species | % |
|---|---|---|---|
| 1 | Notopteridae | 1 | 2.3 |
| 2 | Cyprinidae | *17* | 39.5 |
| 3 | Cobitidae | *1* | 2.3 |
| 4 | Namacheilidae | *1* | 2.3 |
| 5 | Siluridae | *3* | 7.0 |
| 6 | Bagridae | 4 | 9.3 |
| 7 | Heteropneustidae | 1 | 2.3 |
| 8 | Pangasiidae | 1 | 2.3 |
| 9 | Clariidae | 2 | 4.8 |
| 10 | Channidae | 3 | 7.0 |
| 11 | Anabantidae | 1 | 2.3 |
| 12 | Gobiidae | 1 | 2.3 |
| 13 | Cichlidae | 1 | 2.3 |
| 14 | Ambassidaevassidae | 1 | 2.3 |
| 15 | Synbranchidae | 1 | 2.3 |
| 16 | Mastacembelidae | 2 | 4.8 |
| 17 | Belonidae | 1 | 2.3 |
| 18 | Serrasalmidae | 1 | 2.3 |
| | **Total 43** | | 100.00 |

**Source: based on field survey, 2017**

**Qualitative and quantitative analysis:**

Table 2 exhibits a total of 43 fish species belonging to 18 families were observed from the field during 2016-1. Cyprinid family dominates with as many as 17 species covering about two-fifths (39.5 per cent) among the total species. Family bagarideae occupies second position by covering per cent nearly in double digits (9.3), which is closely followed by two families namely Siluridae and Channidae (7.0 per cent each ). It is interesting to note that a dozen out of eighteen families have only single species. This distribution can be easily comprehended through fig. 2.
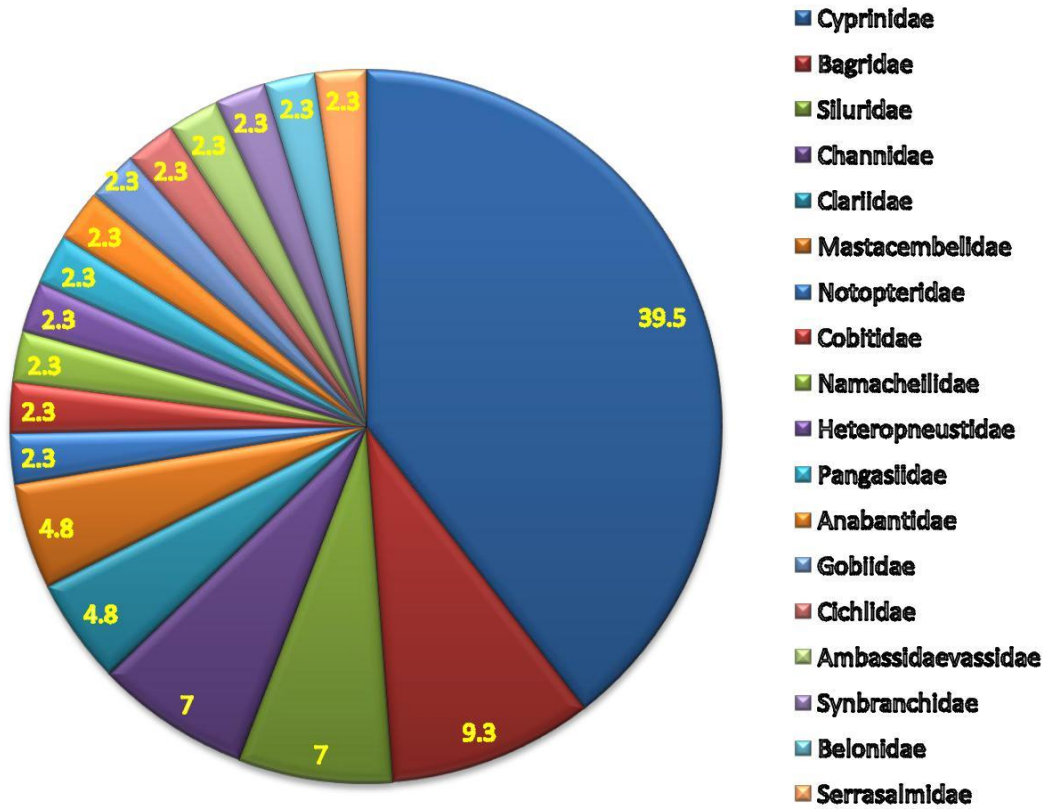
Legend:
- Cyprinidae
- Bagridae
- Siluridae
- Channidae
- Clariidae
- Mastacembelidae
- Notopteridae
- Cobitidae
- Namacheilidae
- Heteropneustidae
- Pangasiidae
- Anabantidae
- Gobiidae
- Cichlidae
- Ambassidaevassidae
- Synbranchidae
- Belonidae
- Serrasalmidae

**Fig. 2 Percentage Distribution of fish species observed from the field ,2016-17**

The above result shows that percentage of common carp fishes like rohu, catla , mrigal and silver carp are the dominant fishes in the study area. M. Tengna, M. Cavasiusu, M. Oar, and w. attu has found in moderate quantity. The third category of extremely low includes fishes like C.batrachus, A.testudineesas, C.nema, and A. Chuchia, which are found in the ponds and river pools inside the dense forest.

This uneven distribution of fish families and species seems to be attributed to the regular seed production and fish production of major carps in Chhattisgarh by both the government and the private hatcheries playing a vital role in view of taking the state amongst the highest fish producing state in the country. The rural and tribal fishermen are also showing much interest in purchasing fast growing fish seed for making more money in short duration. This is clearly seen in good price of Rohu , catla and mrigal in the market. These steps have also damaged the natural aquatic environment as a large numbers of families and species are hardily seen now a days. There low propensity has laid them to the verge of extensions thats why quit a good number of them have been reported as an endangered fish speices, which troubles the conservators and environmentalist.

## Suggestions

The study has been taken up to reveal the ground situation of fish diversity keeping the declining diversity of fishes in the study area. The report is by and large positive. Therefore a few suggestions are given in order to conserve and enrich fish diversity in the study area .

- To declare and preserve natural lakes like water bodies within and nearby forest for conservation endangered fish species in each and every blocks .
- Fishing in the protected water be highly restricted and done in the presence of the gram panchyat.
- A well equipped fish laboratory should be developed under the supervision of fish and fisheries at the district level to carry our research to enrich the declining fish species

- The practical area of biotechnology must be harnessed for preserving and enhancing good quality seed of endangered fish species.

## Conclusion:

In Rajnandgaon region, fish abundance is little fluctuating The southern part of region is largely covered by dense flora and fauna as compared to the northern part, where as the plane area of the eastern part exhibits low magnitude of flora and fauna it is plain area. The observation indicate that the declining in the overall numbers of fish fauna in both traverse Rajnandagaon to Aundhi and Rajnandagaon to Gandai. The reduction of fish species is and indicative of encroachment of water bodies ,unregulated fishing, poor monitoring system and unscientific fishing an fish culture . It is very necessary for the studying the life history traits and demography of the most important threatened fishes. This small effort in the field of fish fauna study; is open a new door for incoming researchers.

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## "Phytosociological Study of Macrophytes for Identifying Natural Vegetational Composition of Arpa River in Bilaspur City, Chhattisgarh Smt. Shubha Verma

### Abstract

*Vegetation can be defined as a characteristic collection of individual plant in connection with their growth site. This investigation was carried out at 6 different selected sites of Arpa river. Data collection period was 2 years. These vegetational data were quantitatively analysed for floristic structure like abundance, density, and frequency. Data were also analysed for characterization of habitat.*

*Lemna minor and Azolla pinnata has the highest density and abundance with Echinochloa colonum and Spirodella and Ceratophyllum. These plants naturally do not belong to the dominant vegetation types of running water. These are formed in stagnant water. (Gerhard Wiegleb, 1988; Analysis of flora and vegetation in Rivers).*

*River Arpa has flowing water only in rainy season rest of the period of the year it has either stagnant water or underground water. In this investigation only hydrophytes were taken in to consideration although observations show that Marshy plant community might have more species diversity than true hydrophytes.*

**Keywords** : Phytosociology, Macrophytes, Arpa river, Eutrophication, Plant Community.

### Introduction:

Bilaspur city is second largest city of Chhattisgarh state. It is located at latitude 21°47' to 23°8' and its longitude is 81°14 to 83°15'. It is eastern part of Chhattisgarh. Average rainfall is 1220 mm. 3 rivers Surround Bilaspur district, they are Agaar, Maniyari and Arpa. Arpa river is the life line of Bilaspur. It is one of the tributary of Mahanadi River. The length of Arpa is about 147 km. and average water flow is 400 m. Except rainy season there is lack of proper flow in this river. The maximum part of the rain water gets stored in check dams less water is free to flow and due to this, water is stagnant in the area of the check dams and rest of the part of river is almost dry in winter and summer. Water is generally available below the ground level.

### Objectives:

To analyse phytosociological data of Arpa river, which will help to identifying the principal ecological characteristics of plant community of this river. It will also help to determine to which extent certain species occur more frequently in Arpa river.

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**-** Assistant Professor of Botany,Govt. Agrasen College, Bilha, Distt. Bilaspur (C.G.)

## MATERIALS AND METHODS:

### I.        Vegetation sampling and phytosociological analysis:

A minimum plot size has been determined by species area curve produced for physiographic limit sampled (Kent 2012). For sampling, standard, scientific method followed by various workers with respect 16 phytosociological studies (Cottom and curtis 1956, Ralhann et al. 1982, Saxena dnd Singh 1982, Nayak et al. 2004, Lu et al. 2004, Nautiyal 2008).

Vegetation was studies during vegetational period from August 2015 to August 2017using the Braun-Blanquet method (1964). In order to determine the interaction between environmental factors and plant communities, Quadrates were taken from different vegetation types. The phytosociological relieves were recorded according to the principles of the Zurich-Montpellier approach Braun-Banquet sampling scale (Barkman et al., 1964). The water samples were also collected from the river in different seasons, where sociological quadrates were taken and measurements were taken. Collected plants were identified by professional taxonomists (Allen et al. 1971; Smith 1971, Anderson 1999, Maden 2004).

### II.        Description of the study area:

The study area is located at latitude of 21°47' to 23°8' and at longitude of 81°41' to 83°15'.Climatic factors are always interacting with each other and vegetation is formed as a result of the combined effects of climatic elements. Temperature, length of photo period, moisture and sunlight is the most important climatic factors that influence to the natural vegetation. The climate of the area was examined using data from the meteorology station of the Bilaspur city.

The most arid and hottest months are May and June with a mean temperature of 43°C. The mean annual temperature is 27°C in the region. It was determined that the research area has a semi-tropical climate.

The river has average 30 meters width depth of the river at various places is different. It is 2 to 5 meter in rainy season and 0-½ to 2 meters in winter season. Two types of water in the river, in rainy season water is less transparent, pale yellow in color, dusty and muddy. In winter and summer water is more transparent and clearer with improper flow, water is almost stagnant.

### III.    Analysis of Water:

Sample of water was collected for the analysis of chemical and physical properties. It was taken in August 2015 in rainy season and in the month of January 2016 in winter season. The transparency of water was measured by using transparency tube. Chemical factors were analysed by standard methods. Laboratory analysis has been done for pH and concentrations of sulfate, chloride, Ammonium Nitrate and total Phosphorus.

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## Table 1.1 : Physico-chemical Analysis of water of River Arpa

| S.No. | Parameters | Value | |
|---|---|---|---|
| | | Minimum | Maximum |
| 1 | pH | 7.7 | 8.3 |
| 2 | Temperature °C | 21°C | 30°C |
| 3 | Dissolved Oxygen (mg/L) | 6.0 | 7.7 |
| 4 | Bio-chemical      Oxygen Demand | 2.2 | 3.6 |
| 5 | Nitrate (mg/L) | 1.0 | 1.22 |
| 6 | Nitrite (mg/L) | 0.02 | 0.03 |
| 7 | Transparency (cm.) | 3.20 | 7.0 |
| 8 | Ca (ppm) | 17.0 | 22.0 |
| 9 | Mg (ppm) | 0.27 | 0.33 |
| 10 | Cl (ppm) | 56.0 | 73.2 |
| 11 | $SO_4$ (ppm) | 7.1 | 8.6 |

## IV.    Phytosociological Study :

In the present study following 06 (Six) river catchments were selected in a way to cover large physiographic area of the river in the city for the phytosociological study of macrophytes of Arpa :

1.    Koni
2.    Sarkanda
3.    Dayalband
4.    Chhath Ghat, Torwa
5.    Checkdam, near Devarikhurd and
6.    Dhenka, Near the darrighat, Bilaspur

The time period of collecting data by sampling was 2 years. Sampling unit was 60 x 60 c.m. Random sampling has been done in 6 (Six) different catchments of main river and river richness of 2-3 meter width of river bank (Marshy area).In the present study only the species that were more consistently present has been included. In this study only Hydrophytic Macrophytes vegetation has been examined. Land plants growing on eroded bank were excluded; helophytes which behave like hydrophytes (amphiphytes) in the sense of Kohler et al. 1996 has been included. Density represents the numerical strength of a species in the community. The number of individuals of the species in any unit area is its density. Abundance gives little idea of the distribution of the species. After determining the percentage

frequency of each species, various species are distributed among Raunkiaer's (1934) five frequency classes. It was also tried to analyse these data for identification of indicator species for eutropic as well as mesotrophic condition.

**Table 1.2 : Showing Density, Abundance and Frequency and frequency class of Flora of River Arpa**

| No. | Name of the Plant | Family | Habit Class | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Total | Density | Abun-dance | Frequency % | Frequency Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Azolla pinnata | Azollaceae (Meridophyta) | FFH | 21 | 37 | 42 | 29 | 19 | 23 | 08 | - | - | 12 | 191 | 19.1 | 23.8 | 80 | D |
| 2 | Carex feida | Cyperaceae monocote | MH | - | - | - | - | - | - | 7 | 13 | 8 | 13 | 41 | 4.1 | 10.25 | 40 | B |
| 3 | Ceratophyllum demer | Ceratophyllaceae | SH | 08 | 05 | 11 | 07 | - | - | - | - | 09 | . | 40 | 4.0 | 8.0 | 60 | C |
| 4 | Cyperus exalatus | Cyperaceae | MH | - | - | - | - | - | - | 10 | 14 | 08 | 05 | 27 | 2.7 | 6.75 | 40 | B |
| 5 | Eichhornia Crassipes | Pontaderiaceae | FFH | 04 | 03 | 05 | 05 | 08 | 06 | - | 04 | - | 02 | 37 | 3.7 | 4.62 | 80 | D |
| 6 | Echinochloa colonum | Poaceae | MH | - | - | - | - | - | - | 08 | 11 | 04 | 09 | 32 | 3.2 | 8.0 | 40 | B |
| 7 | Hydrilla verticilata | Hydrocharitaceae | SH | 08 | - | 07 | 11 | 09 | - | - | - | - | 08 | 43 | 4.3 | 8.6 | 50 | C |
| 8 | Ipomoea aquaica | Comolvulaceae | EH | 05 | 04 | - | - | 03 | - | 02 | - | - | 04 | 18 | 1.8 | 3.6 | 50 | C |
| 9 | Lemna minor | Lamnaceae | FFH | 57 | 53 | 61 | 51 | 47 | 62 | 27 | - | - | 32 | 390 | 39.0 | 48.75 | 80 | D |
| 10 | Marsilea minima | Marsiliaceae | EH | - | - | 06 | - | - | 04 | - | 02 | 05 | 07 | 19 | 1.9 | 4.75 | 40 | B |
| 11 | Pistia stratiotes | Araceae | FFH | 03 | 04 | - | - | 05 | 03 | - | - | - | 02 | 17 | 1.7 | 3.4 | 50 | C |
| 12 | Polygonum limbatum | Polygonaceae | EH | - | - | - | - | - | - | 04 | 03 | - | 05 | 12 | 1.2 | 4.0 | 30 | B |
| 13 | Potamogeton | Potamogetonaceae | SH | 07 | 11 | 09 | 12 | 17 | - | 16 | - | - | 13 | 85 | 8.5 | 12.1 | 70 | D |
| 14 | Scirpus auriculatus | Cyperaceae | EH | - | - | - | - | - | - | 06 | 07 | 05 | 03 | 21 | 2.1 | 5.25 | 40 | B |
| 15 | Spirodella polyrliza | Lamnaceae | FFH | 11 | 08 | 07 | 06 | 03 | - | 04 | - | - | 04 | 43 | 4.3 | 5.37 | 70 | D |
| 16 | Trapa bispinosa | Trapaceae | EH | 05 | 03 | - | 04 | 02 | - | - | - | - | 03 | 17 | 1.7 | 3.4 | 50 | C |
| 17 | Typha angustata | Typhaceae | MH | - | - | - | - | 03 | 06 | - | 05 | - | 07 | 21 | 2.1 | 5.25 | 40 | B |
| 18 | Utricularia | Lentibulariaceae | SH | - | - | 07 | - | 04 | 03 | - | - | - | . | 14 | 1.4 | 4.66 | 30 | B |

FFH - Free floating hydrophyte, MH - Marshy, hydrophytes. Q − Quadrate (Sampling Unit) EAM - Emergent Hydrophytic, SH - Submerged Hydrophy

## RESULT:

In the present investigation 18 macrophytes have been identified from the study site, and these 18 species are quantatively analysed for density, abundance, and frequency. Table-2 shows the density abundance and frequency of the 18 most frequent species.

*Lemna minor* and *Azolla pinnata* has the highest density. *Lemna* and *Azolla* has also the highest abundance followed by *Echinochloa colonum*, *Spirodella* and *Cyperus* exalatus.

*Azolla pinnata*, *Lemna minor* and *Echhornia Crassipes* were the most frequent species, followed by *pistia*, *Spirodella*, and *Cyperus*. All other species occurred in less than 40% but more than 20% of the site. *Azolla*, *Lemna* and *Eichornia* were found with the similar frequencies in all observations. Less frequent species are *Marsilea minima*, *Utricularia* and *Ipomoea aquatica*.

6 of the 18 species were helophytes which were more frequently found in an emergent growth from than under submerged conditions. 11 of the 18 species were true hydrophytes.

- There were two (2) species of pteridophytes, 8 were monocates and 7 were dicots. Monocatyledonous specises were found more than the dicots.

- As to spatial occupancy 7 species found emergent, 5 were floating and only 4 in submerged state.

- No any differences has recognized for diversity and distribution of these 18 macrophytes in the period of study (2 years).

- *Utricularia alsinoids* was not found in the year of 2017.

In rainy season catchments lost their natural vegetation due to flow in river, only helophytes were there, which are not true hydrophytes.

## DISCUSSION:

The abundance of *Lemna minor* and *Azolla pinnata* has characterized the Arpa river by clustering at different catchments of river. On the other hand the *Eichhornia* has a wide distribution area in river.

*Ipomoea aquatica*, *marsilea* and Trapa has no clusters in this habitat. *Azolla* and *Lemna* has found together as the result of this all catchments of the river are covered by *Azolla*, *Lemna* and *Eichhornia*.          As stated earlier that the mean temperature of the area is

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27°C hence it is suitable for the growth of *Lemna* because *Lemna* can grow at wide range of temperature, between 6 to 33°C with sufficient nutrients.

There is correlation between the distribution pattern of the vegetation types and the water chemico-physical features, (S. Ceschin, V. Zuccarello and G. Caneva 2010; Role of Macrophytes Communities as bioindicators of water quality).

*Lemna* has the highest density, highest abundance and highest frequency. Because of small size greater number of *Lemna* has occupied each sampling unit. *Eichhornia* and *Azolla* are highly productive plants. An abundance of nutrients due to chemical runoff eutrophication leads to carpet of these plants at the different catchments of Arpa river.

*Potamogeton* and *Ceretophyllum demer* has the highest density and frequency in the class of submerged plant. *Potamogeton* and *Ceretophyllum demer* develop in eutrophic water of medium quality (S. Ceschin, V. Zuccarello and G. Caneva 2010 : Role of macrophytes communities as bioindicators of water quality). It indicates that Arpa river has no high rate of chemical run off from industries.
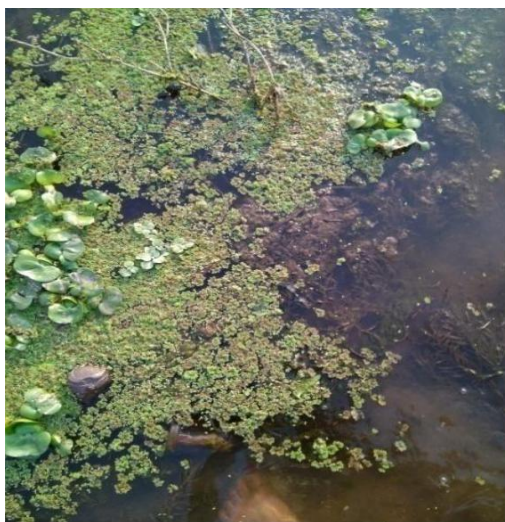
6 species of the 18 species of helophytes has been taken into consideration, which were more frequently found. Helophyte communities are usually an integral part of the river community and together with true helophytes complex vegetation types are formed.

## CONCLUSION :

Species richness and species evenness are the components of the biological diversity. Results shows that the environment of Arpa river is low in species richness and has high evenness for species. Although river bank has more diversity than true hydrophytes, but in this investigation it has not been considered.

No species were found that grows well in hypertrophic water of poor quality. It indicates that despite of low species diversity water of Arpa river has no much chemical runoff which may lead to hypertrophic condition in Arpa river.

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