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Lignocellulolytic Enzyme Production by Two White Rot Fungi under Solid State Fermentation

Anjali Singh✉, Asha Pertin and R. K Singh

Abstract

Global warming due to burning of fossil fuel and depleting crude oil reserves has necessitated search for other renewable energy resources. Lignocellulosic plant biomass, the most abundant renewable carbon source on Earth, can be conveniently converted liquid biofuel whose use would not contribute additional green house gases to the environment. However, conversion of biomass to fermentable sugar, and then to ethanol by fermentation, requires a pretreatment of plant biomass for removal of lignin present there in. Out of several pretreatment methods available for removal of lignin, the biological pretreatment methods using lignolytic microorganisms (bacteria or fungi) or their enzymes are environmentally friendly. Fungi are the most important group of organisms contributing to degradation of lignocellulosic biomass, among which a particular group of fungi known as the white rot fungi have received much attention in recent years due to their efficient enzyme systems that effectively remove lignin.

In the present study, we examined two white-rot fungi, Ganoderma gibbosum and Lentinus sajor-caju, for their cellulolytic (FPase, CMCase, â-glucosidase), hemicellulolytic (Xylanase) and ligninolytic activities {Laccase, Lignin Peroxidase (LiP), Manganese peroxidase (MnP)} under solid state fermentation using two substrates, wheat bran and saw dust. Crude enzyme extract obtained on 6th day from the fungus colonized substrate was used for determination of various enzymatic activities (IU/g).

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The lignocellulolytic potential of both fungi and the ratio of individual hydrolytic enzymes in their enzyme complex were significantly affected by the type of substrates used for SSF. Production of laccase, MnP, CMCase and â-glucosidase by both white rot fungi was substantially more on wheat bran. They produced very high amount of laccase on wheat bran (L. sajor-caju - 3555.3 IU/g and G. gibbosum - 2084.0 IU/ g). On saw dust, decline in laccase production was substantially in G. gibbosum (1451.25 IU/g) but drastic in L. sajor-caju (434.85 IU/ g). G. gibbosum produced xylanase only on wheat bran and it was in good amount (203.68 IU/g). L. sajor-caju did not produce this enzyme on any substrate. Cellulase activity by both fungi was much lesser in comparison to their lignolytic activity. Except for MnP by G. gibbosum on wheat bran, activities of LiP and MnP in both fungi were suboptimal. On the basis of enzyme activity observed in the study, both white rot fungi appear to be selective lignin degraders.

Key Words : White Rot Fungi, *Ganoderma*, *Lentinus*, Lignocellulolytic enzymes, Solid State Fermentation

Introduction

Vehicular transportation, power generation and some manufacturing processes largely depend on fossil carbon resources and crude oil. Excessive use of these resources has resulted in massive emissions of greenhouse gases, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) into the environment leading to global warming (Forster et al., 2007). In recent years, serious concerns have been expressed on the dangerous consequences of global warming looming large on the sustainability of human life. Further, it is estimated that crude oil reserves will become largely exhausted in next 50 years if the rate of its consumption continues at the same pace (Demirbas, 2009; DiLallo, 2014), and sub-economic or conditional resource that cannot be extracted profitably at present price would lead to huge increase the crude oil price. Other fossil fuels - Natural Gas or methane - would also get exhausted in next 50-100 years and coal despite being the most abundant fossil fuel on earth that can provide a supply for next 230 year (Earnst, 2000) is a dirtiest source of fossil fuels responsible for a maximum emission of green house gases.

Hence, to mitigate the problem and danger of global warming, many countries of the world have reached to a global agreement for reducing the emission of greenhouse gases by decreasing the consumption of fossil fuels (Tollefson,

2015). This endeavor has necessitated for utilization and our greater dependence on other renewable energy sources such as biomass, hydropower, geothermal, solar, wind and marine energies (Panwar et al., 2011). Thermochemical or biochemical conversion of plant biomass into gaseous or liquid fuels has emerged in recent years as one of the most important technologies for sustainable production of renewable fuels (Balat, 2010; Saidur et al., 2011). Since Carbon dioxide emission from burning of biofuel is assimilated by plants for photosynthesis, hence, it does not contribute additional greenhouse gases as in case of fossil fuels (Saidur et al., 2011).

Thermochemical conversion derives energy from biomass by combustion, gasification, and pyrolysis and various chemical reactions whereas biochemical conversion uses microorganisms during fermentation or esterification for biofuel production (Chen, 2014). The conversion process occurs by two different pathways depending upon the type of raw materials; (i) Conversion of plant derived oils are into biodiesel (fatty acid methyl ester, FAME) by a chemical process called transesterification, and (ii) Conversion of plant derived sugars and starch into bioethanol by fermentation. These biofuels were called first generation biofuel. The cost of production of biodiesel and bioethanol and their efficiency as fuel is comparable to diesel and petrol derived from crude oil. Nevertheless, these biofuel are ecofriendly and with refinement of technology their cost of production on large scale would be comparatively lesser.

Biodiesel has a potential to replace conventional diesel fuel and many energy crops such as sunflower, soya, groundnut, cotton, rapeseed, palm oil, castor oil, neem and *Jatropha curcas* are being explored for producing oils for biodiesel production. Rapeseed oil has been used for commercial production of biodiesel in Germany and France (Sagar and Kartha, 2007). In India, *Jatropha curcas* has been selected as one the potential energy crop for biodiesel production and attempts are been made by government agencies for promoting its cultivation throughout the country on marginal land.

Ethanol was the first renewable fuel produced by microbial fermentation process from plants derived sugar and starch using sugarcane and corn in Brazil and USA respectively. Blending of ethanol in various proportions with gasoline (petrol) is in use around the world in automobiles, light-duty trucks and motorcycles. Ethanol fuel mixtures have "E" numbers which describe the percentage of ethanol fuel in the mixture by volume. The most commonly used blend is E10. Blends from E20 to E25 have been used in Brazil since the late 1970s. E85 is commonly used in the U.S. and Europe for flexible-

fuel vehicles. Hydrous ethanol or E100 is used in Brazilian neat ethanol vehicles and flex-fuel light vehicles with minor engine modifications.

However, biofuel from sugarcane and corn are in short supply and for the sake of maximizing its production, large area of arable land is to be used with sufficient input cost which would reduce available cultivable land for food crops thus inseminating a stiff competition for land between fuels and food. This "fuel versus food" debate has been in focus in recent years when a large arable area was purposefully used for sugarcane and corn in Brazil and USA for biofuel production.

Besides sugar and starch yielding crops, bioethanol can also be obtained by fermentation of lignocellulose biomass derived sugars. Lignocelluloses are defined as plant or wood cell walls in which celluloses and hemicelluloses are intimately associated with lignin (Deobald and Crawford, 1997). They are the largest renewable organic resource on earth with estimated annual worldwide terrestrial production of 200 x 10^{12} Kg (Foust et al., 2008). Lignocellulosic biomass for bioethanol production offers many advantages which include the renewable and ubiquitous nature of biomass and its non-competitiveness with food crops, and the higher reduction in greenhouse gas emission (Binod et al., 2013). A variety of cellulosic feedstock such as non-food plant species such as fast growing trees or grasses, agricultural wastes or crop residues, agro-industrial by-products, and municipal cellulosic solid waste may be used for production of bioethanol (Sanchez and Cardona, 2008; Limayem and Ricke, 2012; Hadar, 2013).

Major portion, about 90% dry plant biomass is lignocellulose composed of three types of polymers - cellulose, hemicellulose, and lignin. They are present in plant cell wall in various proportions. Normally the ratio between cellulose, hemicellulose, and lignin is 4:3:3, however, it differs considerably in hardwood, softwood, and herbs and its composition depends on genetic and environmental factors. Typically, the chemical composition of various lignocellulosic materials is as follows (Betts et al., 1991) :

Plant raw materials	**Cellulose (%)**	**Hemicellulose (%)**	**Lignin (%)**
Hard wood	40-50	24-40	18-20
Softwood	45-50	25-35	25-35
Grasses	25-40	25-50	10-30

Cellulose : Main constituent of plant cell wall is cellulose that comprises about 50% of wood cell wall (Fengal and Wegener, 1983). Cellulose is a highly crystalline homogeneous polysaccharide composed of over 10,000 D-glucose units linked together by â-1,4 glycosidic bonds. The individual chains adhere to each other by hydrogen bonding and vander-waal forces along the length of chain. Physical and chemical evidences indicate that cellulose contains both highly crystalline and less ordered amorphous regions (Atalla, 1993). Due to its crystalline structure, cellulose resists degradation and requires more complex enzyme system for efficient degradation.

Hemicellulose : Hemicellulose a ramified polymer and very heterogeneous polysaccharide. It consists of two or more monosaccharaides and generally classified on the basis of the main sugar residue in the backbone, e.g. xylans, mannans, galactans, glucans. It is frequently branched with various degree of polymerization of 100-200 subunits (Kuhad et al., 1997). In hardwood and annual wood plants, it consist of mainly xylans (15-30%), whereas in softwood, it consists of galactoglucomannas (15-20%) and xylans (7-10%) (Fengal and Wegener, 1983). Xylan is the most common hemicellulosic component of grass and wood. Hemicellulose is more soluble than cellulose and gets easily hydrolysed to monosaccharaides. Cellulose and hemicellulose are termed together as holocellulose.

Lignin : Lignin is a complex, amorphous, hydrophobic, cross-linked aromatic heteropolymer bonded by both non-covalent and covalent cross linkages. It is formed from phenylpropane units joined together by non-hydrolyzable linkages. It is found as an integral part of plant cell wall and very difficult to degrade (Fengal and Wegener, 1983).

However, conversion of cellulose to sugar is more difficult in comparison to starch because in lignocellulosic plant biomass, cellulose, hemicellulose and lignin are intertwined to form a complex and compact cell wall structure. Presence of lignin in the cell wall as a barrier and the degree of crystallinity of cellulose creates a natural resistance during the conversion process of lignocellulosic biomass into fermentable sugars. Hence, a pretreatment step is essential for removing lignin and reducing the crystallinity of cellulose so that cellulose and hemicellulose present in the plant cell wall become freely exposed and easily disrupted (Mosier et al., 2005, Kumar et al., 2009).

After pretreatment, the released cellulose and hemicelluloses are hydrolyzed to monomeric sugars (hexoses and pentoses) by fermentation of sugars to

ethanol by ethanologenic microorganisms such as yeasts or bacteria (Stephanopoulos, 2007; Joshi et al., 2011). Biofuel produced by this process are called 'Second generation biofuel', and though it has immense potential and a definite role to play in future, presently such biofuel have not yet reached commercial production and intensive research is being pursued all over the world to make it a commercially viable technology.

Several pretreatment strategies of lignocellulosic biomass have been developed for removal of lignin and disrupting the crystalline structure of cellulose. It includes physical, chemical (alkaline or acid), thermochemical and biological treatments (Woiciechowski et al., 2013). Among all these methods, acid hydrolysis is the most commonly used pretreatment method, and sulfuric acid is the most frequently used acid, but other acids, such as hydrochloric, phosphoric, and nitric, are also reported (Rodriguez-Chong et al., 2004; Gamez et al., 2006; Woiciechowski et al., 2013). However, acid hydrolysis requires expensive and harsh pretreatments and effluents from chemical pretreatment contain substances that are reported to be toxic and mutagenic (Herpoel et al., 2002) which are not acceptable from environmental point of view. Hence, biological pretreatments of lignocellulosic biomass using either lignocellulolytic microorganisms (bacteria or fungi) or their enzymes are presently being widely investigated. Fungi are the most important group of organisms contributing to degradation of lignocellulosic biomass. They utilize a set of enzymes that degrade polysaccharides present in the cell wall. It includes following hydrolytic and oxidative enzymes:

1. Cellulases that degrade cellulose. It includes â-1,4-endoglucanase that cleaves the intermonomer bonds in cellulose microfibrils; â-1,4-exoglucanase that removes mono- and dimers from the end of glucose chain; and â-1,4-glucosidase (cellobiase) that releases D-glucose.
2. Hemicellulases that degrade hemicellulose. It includes a variety of hydrolytic enzymes such as xylanases, â-xylosidases, á-L-arabinofuranosidases, á-D glucuronidases and various esterases.
3. Peroxidases and phenoloxidases are responsible for lignin degradation and it includes mainly four main fungal enzymes lignin-peroxidase (LiP), manganese peroxidase (MnP), laccases and hydrogen peroxide-producing enzymes.

Ligninolytic abilities of fungi

Among fungi, the basiodiomycetes fungi are efficient degraders of

lignocellulosic biomass. They are generally divided into two main groups, brown rot and white rot fungi. Brown rot fungi generally degrade cellulose and hemicelluloses and modify lignin partially whereas white-rot fungi are able to effectively degrade all wood components; however, they degrade lignin more rapidly and efficiently and can lead to its complete mineralization (Narayanaswamy et al., 2013).

Being efficient lignin degraders, the white rot fungi have been extensively studied for their ligninolytic enzymes, Laccase, LiP, and MnP. However, white rot fungi and even the different strains of same species can differ in their lignocellulose decaying efficiency (Eriksson et al., 1990; Blanchette et al., 1992). Many white rot fungi remove both holocellulose and lignin equally efficiently causing a type of rot that is referred as non-selective or simultaneous rot (Blanchette, 1995; Wong, 2009). Examples of such fungi are *Trametes versicolor* (Hatakka, 1994; Levin et al., 2005), *Heterobasidion annosum* (Eriksson et al., 1990; Blanchette, 1995) *Phellinus robustus*, *P. igniarius* (Blanchette, 1984), *Ganoderma curtissi* (Blanchette, 1984) and *Irpex lacteus* (Wong, 2009). More than 1,500 species of white-rot fungi have been reported to decompose lignin with little consumption of cellulose (Tian et al., 2012). They preferentially remove lignin due to efficient production of laccase and MnP without substantial loss of cellulose and cause white pocket or white mottled type rot (Blanchette 1984, 1995; Otjen and Blanchette, 1985; Akhtar et al., 1992). Such lignin-selective white rot fungi are *Phanerochaete chrysosporium* (Tien and Kirk, 1983; Otjen and Blanchette, 1987), *Ceriporiopsis subvermispora* (Eriksson et al., 1990; Akhtar et al., 1992), *Ceriporia laceata* (Keller et al., 2003), *Cyathus stercolerus, Pycnoporous cinnarbarinus, Phellinus fastuosus*, *P. nigrolimitatus*, *P. pini*, *P. viticola* (Blanchette, 1984), *Phelbia radiata* (Lundell and Hatakka, 1994, Lundell et al., 2010), *Ganoderma lobatum*, *G. oregonense and G. tsugae*, *Xylobolus frustulatus*, *X. subpileatus* (Blanchette, 1984; Eriksson et al., 1990) and many *Pleurotus* spp. (Becker and Sinitsyn, 1993; Martinez et al., 1994; Giardina et al., 2000). *C. subvermispora* is considered as a model fungus for selective lignin degradation (Orth et al., 1993).

Some white rot fungi, however, have been found to be both selective and simultaneous degraders, e.g. *Heterobasidion annosum* (Eriksson et al., 1990; Blanchette, 1995), *Ganoderma applantum* (Blanchette, 1984; Dill and Kraepelin, 1988) and *Ischnoderma resinosum* (Blanchette, 1984).

However, many white rot fungi have been reported to produce low level of

ligninolytic enzymes. Due to various applications of these enzymes, industries and environmental technologies require them in high amount but at a low cost. Therefore, increasing demand for these enzymes necessitate greater efforts for the search of other efficient white rot fungi with high enzymatic activity. It has been reported that lignocellulolytic activities differ among genera and species and with various fungi-substrate combination (Eriksson et al., 1990). Therefore, it is necessary to continue studying and testing more fungi for their ability to degrade the lignocellulosic biomass quickly and efficiently.

In the present study, we examined two white-rot fungi, *Ganoderma gibbosum* and *Lentinus sajor-caju* (synonym *Pleurotus sajor-caju*) for their lignocellulolytic enzyme activities (FPase, CMCase, â-glucosidase, Xylanase, Laccase, LiP and MnP under solid state fermentation using two carbon sources as substrates, wheat bran and saw dust.

Materials and methods

Lignocellulosic Substrates : Locally available dried lignocellulosic substrates (Wheat bran and Saw dust) were cut mechanically into small pieces, dried at 60 °C in hot air oven till constant weight and packed in sealed plastic bags for further use in solid state fermentation (SSF).

Organisms and inoculum preparation : White rot fungi (*Ganoderma gibbosum* and *Lentinus sajor-caju*) were collected from sub-tropical forests of Arunachal Pradesh. Fungal inocula were prepared at optimal temperature in petri-plates containing Malt Extract Agar and Potato Dextrose agar with the following composition (g/l): Malt extract/ PDA 20.0; $Ca(NO_3)_2.4H_2O$, 0.5; $MgSO_4.7H_2O$, 0.5; KH_2PO_4, 0.5; and Agar, 20.0 (pH 5.0) at 25 °C (Vasdev et al., 2005). The cultures were maintained by periodic sub-culturing and stored at 4 °C.

Lignocellulolytic enzyme production : SSF of selected residues was carried out at 25 °C in 250-ml flasks containing 5 g of lignocellulosic substrates moistened with 20 ml of mineral salt solution $(NH_4)_2SO_4$, 0.05%; KH_2PO_4, 0.05%; $MgSO_4$, 0.05% and pH 5.0) to attain final substrate to moisture ratio of 1:4 (Sharma et al., 2005; Deswal et al., 2011). Four mycelial discs (agar plus) were used to inoculate the lignocellulosic substrates in each flask. After regular time interval, extracellular enzymes were extracted with 25 ml of extraction buffer (Citrate phosphate buffer, pH 5.0). The solid parts were separated by filtration through muslin cloth followed by centrifugation at 10,000g for 10 min at 4 °C.

Enzyme assays: Crude enzyme extract obtained on 6th day from the colonized substrate was used for determination of various enzymatic activities. Carboxymethyl cellulase (CMCase) activity was assayed using Carboxymethyl cellulose (1% w/v) in 50 mM citrate buffer (pH 5.0) at 50 °C for 30 min (Ghosh, 1987). Xylanase activities was determined using 1% (w/v) birch wood xylan, prepared in citrate buffer (50 mM, pH 5.0), and incubated at 50 °C for 10 min. Total cellulase activity (FPase) was measured by using Whatman No.1 filter paper strips (1 cm x 6 cm; 50 mg) as substrate (Wood and Bhat, 1988). For FPase, a rolled filter paper strip was dipped into 0.5 ml of citrate buffer (50 mM, pH 5.0) and incubated with 0.5 ml of diluted enzyme at 50 °C for 1 hour. The reaction was stopped by addition of DNS followed by boiling (Miller, 1959). The colour developed was read at 540 nm. The amount of released reducing sugar was determined using DNS, and quantified using glucose and xylose as standards. The enzyme activities (units/ml) were expressed as amount of enzyme required to release 1µmol of reducing sugar per min under assay conditions. The enzyme activities were expressed in International Unit per gram dry weight substrate (IU/g). â-glucosidase activity was assayed by measuring the amount of p-nitrophenol released from p-nitrophenyl â-D-glucopyranoside (Wood and Bhat, 1988). One unit of enzyme activity was defined as the amount of enzyme releasing 1 µmol of reducing sugars per minute.

Laccase activity was determined spectrophotometrically at 470 nm using guaicol as substrate (Diwaniya et al., 2010). MnP activity was determined in a reaction mixture containing 1mM DMP in sodium tartarate buffer (pH 4.5) using H_2O_2 as oxidizing agent, and the absorbance was read at 469 nm (Martinez et al., 1996). LiP activity was estimated by the method of Tien and Kirk (1983) which is based on oxidation of veratryl alcohol (3,4-dimethoxybenzyl alcohol) to veratryldehyde in the presence of H_2O_2. The reaction mixture contained 0.25ml of enzyme solution, 0.25 ml of 1.0 mM veratryl alcohol, 0.2 mM H_2O_2 and 0.5 ml of 0.1 M citrate buffer. An increase in absorbance at 310 nm was monitored.

Results

G gibbosum produced all lignocellulolytic enzymes in very high amount on wheat bran except LiP (Table 1). Its lignolytic enzymes production was much higher in comparison to cellulase production. It produced 2084.0 IU/g of laccase and 203.68 IU/g of xyalnase. MnP activity of this fungus on wheat bran was three fold higher than LiP (1.47 vs 0.47 IU/g).

Table 1 : Lignocellulolytic enzyme activities of two white rot fungi on two substrates

Enzymes		Enzyme activity (IU/g) of White rot fungi			
		Ganoderma gibbosum		*Lentinus sajo-caju*	
		Wheat bran	Saw dust	Wheat bran	Saw dust
Cellulases	FPase	5.78	0.77	1.87	5.51
	CMCase	8.12	1.06	6.13	2.27
	â-glucosidase	24.20	5.68	25.47	6.66
Hemicellulases	Xylanase	203.68	-	-	-
Lignolytic enzymes	Laccase	2084.00	1451.25	3555.30	434.85
	LiP	0.47	0.69	0.22	0.66
	MnP	1.47	0.74	0.63	0.52

In comparison to wheat bran, its laccase and MnP activities on saw dust decreased to 2/3 and 1/2 respectively. It did not show any xylanase activity on this substrate whereas it was 203.68 IU/g on wheat bran. Further, its FPase, CMCase, â-glucosidase activities were comparatively much lesser than on wheat bran. Its cellulase production declined almost to 20% on this substrate with a substantial reduction in FPase and CMCase.

L. sajo-caju produced very high amount of laccase (3555.3 IU/g) on wheat bran which was about 70% more than *G. gibbosum* (Table 1). However, the LiP and MnP production was 50% less in comparison to *G. gibbosum* on this substrate. *L. sajo-caju* did not show any xylanase activity on either of the substrates. Further, on wheat bran, it produced only â-glucosidase equal in amount to *G. gibbosum* but again the production of FPase and CMCase was substantially reduced.

The laccase production of *L. sajo-caju* on saw dust was comparatively much reduced (434.85 IU/g) and it was 1/8th of its production on wheat bran (Table 1). Compared to saw dust, CMCase, â-glucosidase and laccase production by this fungus was more on wheat bran, whereas, the FPase and LiP production was more on the former, and MnP production was almost similar on both substrates. However, except for MnP by *G. gibbosum* on wheat bran, activities of LiP and MnP in both fungi were suboptimal.

Both *L. sajo-caju* and *G. gibbosum* produced more laccase on wheat bran (3555.3 and 2084.0 IU/g respectively). The production of this enzyme by both fungi decreased on saw dust, but the decrease was less for *G. gibbosum* (1451.25 IU/g) and of substantially more for *L. sajor-caju* (434.85 IU/g). CMCase, â-glucosidase and MnP production by both fungi on wheat bran was also more than saw dust. FPase production by *G. gibbosum* was more on wheat bran than saw dust but it was otherwise for *L. sajo-caju*. However, the LiP production by both fungi was more on saw dust than wheat bran, though it was suboptimal in amount (0.22-0.69 IU/g) on both substrates (Table 1).

Discussion

It has been well described that fungi having selective mode of degradation decay mostly hemicellulose and lignin (Isroi et al., 2011). In our study, both fungi produced lignolytic enzymes much more in quantity than cellulolytic enzymes. Further, they produced more laccase and MnP but lesser amount of LiP. Hence, they seem to be selective lignin degraders. It has been reported that laccase and MnP are the most common ligninolytic enzymes in different white rot fungi (Vyas et al., 1994; Vares et al., 1995; Nerud and Misurcova, 1996; Hofrichter et al., 1999; Tekere et al., 2001; Arora et al., 2002). In a similar fungus, *G. applanatum*, Dinis et al. (2009) found higher laccase, lower MnP and no LiP activity during SSF of wheat straw for all incubation periods. Tour et al. (1995) also reported laccase as a frequently dominant enzyme in white rot fungi indicating its important role in lignin degradation. Pelaez et al. (1995) reported presence of laccase activity in half of the 68 fungal strains tested and the laccase activity was the highest oxidizing enzyme activity found, but none of the 68 fungi tested showed any LiP activity. It has been also reported that genome of a related species, *G. lucidum*, harbors many genes for lignin peroxidases along with laccases (Sanodiya et al., 2009), and the species expresses a number of lignin-degrading enzymes, notably laccases, when cultivated on wood (D'Scouza et al., 1999) or non-wood substrates (Manavalan et al., 2012).

L. sajor caju produced very low amount of cellulase and did not produce xylanase at all on both substrates. Reddy et al. (2003) also reported very low levels of xylanase, CMCase, and FPase during SSF of banana wastes by *L. sajor caju* (synonym *Pleurotus sajor-caju*). Many species of *Pleurotus* have been described as the laccase and MnP producers (Buswell et al., 1995; Baldrian and Gabriel, 2003; Reddy et al., 2003; Silva et al.,

2005; Elisashvili et al., 2006) which was also observed in *L. sajor caju* during our study.

High xylanase activity is considered essential for degradation of lignin–hemicellulose matrix. We found high xylanase activity in *G. gibbosum* which in conformity with the findings of Salmon et al. (2015) on *G. applanatum* MR-56 and Malarvizhi et al. (2003) on *G. lucidumon*. Dinis et al. (2009) also reported *G. applanatum* as active producer of xylanase and CMCase. We also observed a very good production of these enzymes by *G. gibbosum* on wheat bran.

Both fungi produced different amount of lignocellulytic enzymes on wheat bran and saw dust thus corroborating with the findings made by others (Rosgaard et al., 2007; Elisashvili et al., 2008) that nature of lignocellulosic material determines the expression of lignocellulolytic potential of fungi and the ratio of individual enzymes in their enzyme cocktail. It has been also reported that wheat bran can induce high amount of lignocellulose-degrading enzymes activity with high amount of laccase both in solid and liquid cultures (Songulashvili et al., 2007; Elisashvili et al., 2009; Fang et al., 2015) which may be because of richness of wheat bran in growth factors, vitamins, and proteins (Machuca et al., 1998).

In of our study, *G. gibbosum* produced 2084.0 IU/g of laccase on 6th day on inoculation with four agar plugs as the inoculum to wheat bran that was kept at 80% initial moisture at 25°C. Revankar et al. (2007) reported 2400 IU/g of laccase production by an indigenously isolated *Ganoderma* sp. on this substrate kept at 70% initial moisture content at 25°C but with seven agar plugs as the inoculum. Hence, *G. gibbosum* appears to be a very potent strain for high laccase production.

The difference between the two white rot fungi in their enzymatic activities on the wheat bran and saw dust, particularly laccase, MnP, xylanase and cellulase, were quite high. This may be result of different fungal strains as well as different growth media that serve as key determinant in regulating lignocellulolytic enzyme synthesis.

Both white rot fungi examined in the study produced copious amount of laccase on wheat bran which is comparable to the *Phanerochaete chrysosporium*, a white rot fungus considered to be a model strain (Orth et al., 1993) due to its high ligninolytic activity. Hence, both *G. gibbosum* and *L. sajor caju* may prove as promising candidate for lignolytic enzymes,

particularly laccase production. Since lignocellulolytic enzymes in industrial application are required in high amount at a low cost, therefore, presently we are carrying out experiments for further optimization of cultures conditions using one factor at a time (OFAT) approach to get the best condition for maximizing their enzyme production so that they can be used for bioethanol production as well as various other industrial and biotechnological applications such as paper and pulp, food and feed., brewery and wine, textile and dye industries, bioremediation and cosmetics.

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Child Labour in India and Assam : A District Level Analysis of the State of Assam

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Abstract

A labouring child has been a part of our social and economic life irrespective of the regions of the world, though the magnitude and perception may have regional difference. This paper is an attempt to discuss the temporal analysis of child labour in India, to give us an idea about the extent of child labour prevalent in the states of India, the interstate variation, the correlates of child labour at the national level, the inter-district variations in Assam and a district level analysis of the correlates of child labour. The paper explores why the child labour remains one of the key concerns in the country. There are wide variations in the extent of child labour in the states of India. The correlation analysis attempts to analyse if child labour is the result of high poverty level, illiteracy, poor economic growth including low per capita income, higher share of vulnerable sections of the society, like ST and SC in total population, etc. However, poverty and lack of economic development may not be the only factors affecting the incidence of child labour. The paper also explores if the levels of education and literacy have a deterring effect on the incidence of child labour.

Key words: Child labour, Illiteracy, Poverty, Economic Development, Per capita income

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I. Introduction

Since time immemorial, a labouring child has been a part of our social and economic life irrespective of the regions of the world. Historically speaking, no country has escaped from the problem of child labour, though the magnitude may have regional difference. Since the time of industrial revolution in Europe and from the mid-nineteenth century in America, a large numbers of children have always been lending a helping hand to their parents in traditional family occupations, especially in relation to the work based caste system prevalent in our society. It can, therefore, be said that though the incidence of labour in various parts of the world is not a new thing, the awareness and concern for children who work as labourers has increased in contemporary times. Globalisation and paradigmatic shifts in the ideals about human rights and childhood has brought about a change in our perspectives and understanding about child labour. Therefore, it has gained prominence as a major international issue. Child labour has various perspectives- economic, political and legal. The related posturing by the International community, National Government, Trade Unions and Non- Governmental Organization in understanding of the demand and supply factor are strongly conditioned by certain incongruous belief structures which have evoked out of diverse historical experiences. For example, in developed countries childhood is perceived as a part of human life span, which requires protection from an exploiting working world of the adult. However in a developing country, work by children in assumed to be an intrinsic part of growing up in conformity with the family and social norms and the child is expected to contribute appropriately to the subsistence of the family. International intervention against child labour has always stumbled and has been unable to address this problem, the reason being the lack of understanding of the historical and cultural backgrounds of the various regions of the world.

Child labour has been recognized as a social and economic evil all over the world. In India, the incidence is quite high. In spite of various legislations, active role of various International agencies and NGOs, a considerable number of children still render their services in hazardous and non- hazardous working conditions. In India, there are various periodical surveys that are conducted by organizations of repute to estimate the amount of child labour– namely, the Census Commission of India, the National Sample Survey Organization (NSSO) and the National Family Health Survey (NFHS - 2 and 3).

The paper is organized as follows. In section II a temporal analysis of child labour in India has been dealt with. It gives us an idea about the extent of child labour prevalent in the states of India. In section III the interstate variation in child labour has been discussed in detail. The correlates of child labour at the national level both for 1991 and 2001 have been discussed in section IV of the article. While the inter-district variations in the incidence of child labour in the state of Assam has been dealt in section V. Finally, a district level analysis of the correlates of child labour has been discussed in section VI. Concluding observations are placed in section VII.

II. Child Labour in India: Temporal Analysis

The following table 1 shows the magnitude of child labour in India in different Census period 1981 & 2001 and NSS Round 1972-73, 1977-78, 1993-94 & 2004-05. It is observed from the table that the magnitude of rural child labour (5 - 14 age group) has considerably declined during the different Rounds of NSS estimates (from 1972-73 to 2004-05). In 1971-72 there were 16.33 million child labour, which had decreased to 16.25 million in 1977-78 and further decreased to 9.27 million in the year 1993-94. As per the 61st NSS Round there were 5.94 million child workers in the country in the year 2004-05.

According to 2001 census, 60.1 per cent child labours are engaged in the rural areas and the rest are found in the urban areas. On the other hand, 61st Round of NSS estimate reveals that rural areas have as high as 82 per cent child labour while the urban areas have 18 per cent of it. The 2001 census data further reveals that out of total child labour, about 15.04 per cent of the child labour belongs to the age group 5-9 years and 84.96 per cent is in the age group of 10-14 years.

Table 1 : Estimates of Child Labour in India, 1972-73 to 2004-05 (in million)

Category	Age-Group	Rural Male	Rural Female	Rural	Urban	Urban Male	Urban Female	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NSS (1972-73) 27th Round	5-9	0.88	0.63	1.51	0.05	0.03	0.08	1.56
	10-14	7.78	5.75	13.53	0.08	0.41	1.21	13.74
	5-14	8.66	6.38	15.04	0.85	0.44	1.29	16.33
NSS (1977-78) 32nd Round	5-9	0.88	0.63	1.51	0.05	0.05	0.01	1.61
	10-14	7.96	5.21	13.77	0.94	0.53	1.47	15.24
	5-14	8.84	5.84	14.68	0.99	0.58	1.57	16.25
Census 1981-1983	0-14	7.34	5.21	12.55	0.76	0.29	1.05	13.59
	5-9	0.09	0.64	1.54	0.06	0.06	0.12	1.66
	10-14	8.44	5.59	14.03	1.07	0.06	1.67	15.07
	5-14	9.34	6.23	15.57	1.13	0.66	1.79	17.36
NSS (1993-94) 50th Round (principal usual activity)	5-9	0.35	0.42	0.83	0.02	0.02	0.02	0.85
	10-14	4.19	3.15	7.34	0.72	0.38	1.08	8.42
	5-14	4.54	3.57	8.17	0.74	0.04	11	9.27
Census 2001 (main + marginal)	5-9	0.18	0.16	0.34	0.13	0.07	0.02	0.54
	10-14	1.17	0.94	2.11	0.65	0.29	0.94	3.05
	5-14	1.35	1.1	2.45	0.78	0.36	1.14	3.59
NSS (2004-05) 61st Round (principal usual activity)	5-9	0.09	0.09	0.18	0.02	0.01	0.05	0.23
	10-14	2.67	2.05	4.72	0.65	0.33	0.99	5.71
	5-14	2.76	2.14	4.09	0.67	0.34	1.04	5.94

Source : Mehta, 2007

NFHS data (1998-99), shown in the table.2 reveals that participation of child worker is higher in rural areas (4.08 per cent) than in the urban areas (1.65 per cent). In rural areas of Assam 2.37 per cent of children were found to be in the child labour category, whereas their percentage was 3.73 per cent in urban areas.

Table 2 : Percentage of Child Labours in 5-14 Age Group in Different States of India (NFHS: 1998-99)

States	Rural			Urban		
	Boys	Girls	Total	Boys	Girls	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	11.84	15.39	13.58	7.14	1.93	4.70
Assam	3.13	1.59	2.37	4.07	3.39	3.73
Bihar	4.17	2.55	3.67	3.79	0.84	2.30
Goa	0.73	2.44	1.58	1.65	0.76	1.19
Gujarat	11.38	8.47	9.96	2.83	2.63	2.74
Haryana	1.79	0.71	1.29	1.79	0.00	0.99
Himachal Pradesh	0.29	0.15	0.22	0.41	1.17	0.77
Jammu	2.79	4.00	3.39	4.99	2.03	3.61
Karnataka	10.02	7.14	8.56	6.58	2.91	4.79
Kerala	0.38	0.40	0.39	0.51	0.00	0.26
Madhya Pradesh	7.19	5.39	6.31	1.70	0.12	0.28
Maharastra	4.39	4.43	4.41	2.08	0.81	1.47
Orissa	2.87	2.52	2.70	5.91	2.91	4.52
Punjab	2.48	0.10	1.42	1.52	0.18	0.90
Rajasthan	5.34	6.61	5.94	1.91	0.65	1.33
Tamil Nadu	3.46	4.59	4.02	4.07	1.62	2.88
West Bengal	4.42	2.13	3.32	2.97	2.84	2.90
Uttar Pradesh	2.57	0.84	1.77	3.08	0.80	2.00
New Delhi	0.71	0.00	0.36	1.89	0.87	1.40
NE States	2.97	2.66	2.82	1.37	2.00	1.69
India	4.44	3.69	4.08	2.83	0.87	1.65
CV (per cent)	82.80	103.26		88.98	73.38	

Source: Mahendra Dev, 2004

The following table 3 provided by the 55th Round of the NSS represents percentage distribution of *'usual status'* child workers in different states of the country in 1999-00. The table unveils that in Assam, though percentage distribution of male child labour in rural areas is higher (6.5) than urban child participation ratio (4.7), but in the case of female participation rate, it is

considerably higher in urban areas (11.4) than in the rural areas (2.5). It is worth mentioning that proportion of urban female child labour in the age group of 10-14 is highest in Assam (11.4) among all the other states.

Table 3: Percentage Distribution of Principal and Subsidiary 'Usual Status' Child Workers in Major States of India: 1999-2000

States	Rural Males		Rural Females		Urban Males		Urban Females	
	5-9	10-14	5-9	10-14	5-9	10-14	5-9	10-14
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	2.9	22.1	2.5	28.3	1.1	8.1	0.3	5.9
Arunachal Pradesh	1.9	3.8	1.0	5.1	0.4	0	1.0	0
Assam	0.2	6.5	0.6	2.5	0.5	4.7	0	11.4
Bihar	0.2	6.4	0.3	3.3	0	3.8	0.1	2.8
Gujarat	0.7	11.5	0.6	11.6	0	2.8	0	4.6
Haryana	0	4.0	0.2	1.0	0	4.7	0	0
Himachal Pradesh	1.1	6.5	0	9.7	0	2.9	0	3.0
J & K	0	4.0	0	3.7	0	2.0	0.2	0.5
Karnataka	0.9	15.1	1.3	15.3	0	7.3	0.2	4.2
Kerala	0	1.1	0	0.2	0	0.5	0	0.4
Madhya Pradesh	0.5	11.4	0	9.8	0.4	3.2	0	1.6
Maharastra	0.7	8.4	1.0	8.7	0	2.8	0	1.7
Orissa	0.5	7.8	0.3	10.3	0	2.1	0	1.3
Punjab	0.5	6.8	0.3	4.2	1.4	4.5	2.2	2.3
Rajasthan	1.5	11.4	3.6	23.4	0.6	4.7	0.3	5.6
Tamil Nadu	0.2	9.0	0.7	8.1	0.1	6.1	0.1	3.3
Uttar Pradesh	0.3	7.2	0.1	5.6	0.4	7.6	0.3	3.1
West Bengal	0.5	7.5	0.3	10.3	0.1	4.5	0.3	8.0
All India	0.6	9.1	0.7	9.6	0.3	4.9	0.2	3.6

Source: Shakti Kak, 2004

III. Interstate Variation in Child Labour

Table 4 shows that rural children were economically more active than urban children. Andhra Pradesh recorded the highest rural work participation rate for both boys and girls, at 11.43 and 13.58 respectively, followed by Karnataka (10.70 and 11.34) and Mizoram (10.31 and 11.57), while Kerala reported the lowest in this respect. On the other hand, Mizoram reported the highest urban child workers for both boys (7.41) and girls (7.44) where as, the state of Kerala reported the lowest for urban boys (0.54). On the other hand, the state of Haryana recorded the lowest for girls (0.39). Due to various definitional and social factors, the total numbers of girl child workers are undercounted in India.

Table 4 : State-Wise Work Participation Rates for Boys and Girls (5-14) in 1991

State/Union Territories	Rural		Urban	
	Boys	Girls	Boys	Girls
(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	11.43	13.58	3.96	2.18
Assam	7.59	4.20	2.96	2.82
Bihar	5.31	3.26	2.37	0.67
Gujarat	6.40	7.81	2.48	0.77
Haryana	3.59	2.24	1.80	0.39
Himachal Pradesh	3.57	5.90	1.59	1.07
Karnataka	10.70	11.34	4.59	2.38
Kerala	0.67	0.54	0.54	0.46
Madhya Pradesh	9.19	10.66	2.25	1.27
Maharastra	6.51	9.86	2.10	0.96
Manipur	3.84	5.34	1.14	1.72
Meghalaya	9.59	7.57	1.43	1.52
Mizoram	10.31	11.57	7.41	7.44
Nagaland	5.50	6.67	1.67	0.95
Orissa	6.87	6.03	2.54	1.26
Punjab	5.91	1.07	2.69	0.35
Rajasthan	6.00	9.75	2.20	1.11
Sikkim	4.97	5.48	5.28	4.12
Tamilnadu	5.26	6.63	3.15	2.02
Tripura	2.93	2.06	1.07	1.28
Uttar Pradesh	5.29	2.87	3.65	0.81
West Bengal	6.55	3.1	2.42	1.29
Andaman & Nichobar	2.55	1.49	1.86	0.35
Arunachal Pradesh	4.95	7.38	2.42	2.11
Chandigarh	3.52	0.72	1.98	0.54
Dadra & Nagar Haveli	11.03	16.95	4.00	4.46
Delhi	1.41	0.39	2.18	0.35
Daman Diu	5.47	5.73	1.82	1.49
Goa	1.55	2.15	2.54	1.64
Lakshadweep	0.38	0.08	0.46	0.12
Pondicherry	1.78	1.48	2.17	0.79
All India	6.56	6.29	2.79	1.23

Source: Deshpande, 2002

In table 5 state wise distribution of child labour is presented. On the basis of the latest NSS Round (2004-05), Mehta (2007) has made an attempt to arrive at the state wise age specific distribution of child labour per thousand of workers (males, females, rural and urban separately).

Table 5 : State-Wise Distribution of Child Labour (5-15 years) : 2004-05

(Per' 000 of total workers)

States	Rural			Urban			Total
	Male	Female	Persons	Male	Female	Persons	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Andhra Pradesh	39.78	69.97	52.36	22.23	48.59	29.73	47.75
Assam	27.92	24.19	23.95	5.16	55.43	11.48	22.84
Jharkhand	21.42	50.88	30.20	19.52	52.57	25.14	29.51
Bihar	21.06	23.85	21.59	23.44	49.11	25.85	21.95
Gujarat	20.36	24.87	22.04	12.76	28.18	15.19	20.09
Haryana	11.50	3.97	10.56	8.69	5.07	8.23	9.95
Himachal Pradesh	6.43	14.19	9.72	0.00	3.78	0.82	8.92
Karnataka	31.38	47.91	38.06	6.55	14.87	8.25	30.68
Kerala	1.07	0.00	0.99	1.41	4.95	2.00	1.22
Chattisgarh	27.07	48.30	36.53	26.70	21.16	26.40	35.35
Madhya Pradesh	21.29	57.50	33.44	13.59	32.17	17.05	30.34
Maharashtra	24.19	35.44	29.13	7.34	6.97	7.11	21.79
Orissa	33.33	64.23	42.00	15.83	36.29	19.42	39.43.
Punjab	17.58	35.00	18.54	8.45	0.00	7.18	14.60
Rajasthan	33.96	98.03	55.25	38.13	56.46	42.09	52.61
Tamil Nadu	7.48	14.74	10.39	6.93	20.52	10.68	10.49
Uttaranchal	28.58	7.02	20.55	3.85	4.23	4.02	17.19
Uttar Pradesh	33.29	50.43	37.50	39.78	132.69	49.88	39.96
West Bengal	25.76	69.04	32.18	21.40	76.52	29.23	31.41
All India	25.59	47.20	32.38	16.31	35.95	19.79	29.46

Note: (i) Calculated from Estimated Population data and Usual Status (ps) WPRs;
(ii) Numbers of child workers are normalized by total workers.

Source: NSS Report No. 515 part 1, Mehta, 2007

Table 6 has shown work participation of children (main + marginal) in the age group 5-14 for the year 1991 and 2001 within the Northeast region. In 1991, Mizoram (9.40 per cent) reported highest child work participation rate, followed by Meghalaya (7.39 per cent) and Arunachal Pradesh (5.65 per cent). In 2001, again, Mizoram (12.34) experienced highest child participation rate, while Tripura (2.79) reported the lowest work participation rate.

In Assam, the proportion of child labour (main and marginal) in the age group 5-14 years decreased from 5.46 per cent in 1991 to 5.07 per cent in 2001. Arunachal Pradesh, Meghalaya and Sikkim experienced increasing trend in child work participation rate.

Table 6 : Child Workers in the States of North East India: 2001

(Main + Marginal Workers)

S.N.	States	1991			2001		
		P	M	F	P	M	F
(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)
1	Arunachal Pradesh	5.65	4.63	6.74	6.06	5.22	6.94
2	Assam	5.46	6.80	4.07	5.07	6.03	4.06
3	Manipur *	3.72	3.12	4.34	5.75	5.57	5.94
4	Meghalaya	7.39	8.23	6.54	8.22	8.64	7.79
5	Mizoram	9.40	9.04	9.75	12.34	11.86	12.83
6	Nagaland	5.29	4.87	5.74	8.48	8.25	8.73
7	Sikkim	5.18	5.00	5.38	12.04	11.92	12.17
8	Tripura	2.29	2.61	1.96	2.79	2.85	2.72

Note: (i)*= Excluding three sub-divisions of Senapati district, (2001)
(ii) P = Person, M = Male and F = Female

Source: Census of India, 2001

IV. Correlates of Child Labour: (National Level) for the year 1991 & 2001

As an under developed country, there are a lot of factors which are responsible for the incidence of child labour in India. Literacy, family poverty, per capita income, female work participation rate and urbanisation are said to be the major determinants for the existence of child labour.

Table 7 : Correlates of Child Labour : 1991

State/Union Territories	Percentage of Child Labour (1991)	Literacy rate in 1991	Per Capita SDP at 1990-91 prices (1993-94)	Poverty rate (1993-94)	Female work participation rates (1991)	Rate of Urbanization (1991)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	10.0	44.09	7006	15.92	50.10	26.84
Assam	0.5	52.89	5520	45.01	15.90	11.08
Bihar	4.0	38.8	3417	58.21	17.20	13.17
Gujarat	5.3	61.29	9054	2218	39.60	34.40
Haryana	2.6	55.85	10526	28.02	27.10	24.79
Himachal Pradesh	4.6	63.86	6896	30.34	52.00	8.70
Karnataka	8.8	56.04	7242	29.88	43.00	30.91
Kerala	0.6	89.91	6524	25.76	23.80	26.44
Madhya Pradesh	8.8	44.20	5516	40.64	41.00	23.21
Maharashtra	5.7	64.87	12010	37.93	47.70	38.73
Orissa	5.9	49.09	4662	49.72	31.70	13.43
Punjab	3.0	58.51	12934	11.95	22.00	29.72
Rajasthan	6.5	38.55	5315	26.46	45.70	22.88
Tamilnadu	4.8	62.66	8051	32.48	47.80	34.20
U.P.	3.8	41.60	4794	42.28	21.90	19.89
West Bengal	4.2	57.70	6247	40.80	18.05	27.39

Source : M. Ghose, 2006; Mahendra S. Dev, 2004; J. John and P. Narayanan, 2006; Census 1991

Table 8 : Correlates of Child Labour (2001)

State/Union Territories	Magnitude Child Labour (2004-5)	Literacy Rate in (2001)	Per Capita SDP at 1980-81 prices (2000-01)	Percentage Poverty rate (1999-2000)	Female work participation Rate (2001)	Rate of Urbanization (2001)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	47.75	60.5	162153	15.8	35.1	27.48
Assam	22.84	63.3	35943	36.1	20.7	12.9
Bihar	21.95	47.0	50381	42.6	18.8	13.37
Gujarat	20.09	69.1	142559	14.1	27.9	37.41
Haryana	9.95	67.9	66325	8.7	27.2	29.01
Himachal Pradesh	8.92	76.5	15933	7.6	43.7	9.80
Karnataka	8.25	66.6	1183329	20.0	32.0	34.06
Kerala	2.00	90.9	80116	12.7	14.4	25.97
Madhya Pradesh	30.34	63.7	89236	37.4	32.2	24.82
Maharashtra	21.79	76.9	294001	25.0	30.8	42.48
Orissa	39.43	63.1	47002	47.2	24.7	15.03
Punjab	14.60	69.7	69841	6.2	19.1	34.02
Rajasthan	52.61	60.4	92339	15.3	33.5	23.40
Tamilnadu	10.49	73.5	148907	21.1	31.5	44.25
U.P.	39.96	56.3	189598	31.2	16.5	21.04
West Bengal	31.41	68.6	173674	27.0	18.3	27.96

Source : Economic Survey of Assam (2005-06); B. Jha, 2007; Vikash Rawal, 2008; Statistical Hand Book of Assam, 2006; Census, 2001

The table 9, shows the correlation matrix for 1991 and 2001 based on the correlates of child labour for states in 1991 (table 7) and in 2001 (table 8). It is seen that literacy rate is an important determinant of child labour in 1991 and 2001, which is negatively related implying that and the incidence of child

labour can be reduced by enhancing the literacy level of the country. The Net State Domestic Product (NSDP) also has a negative impact on child labour. Thus economic development is associated with lower incidence of child labour. In 1991 there was a negative correlation between poverty and child labour (-0.045), but in 2001 poverty is positively correlated (0.378). This implies that for reducing child labour, poverty level must be decreased. So lack of economic development and opportunities remain the key context in which child labour thrives and literacy acts as a deterrent to it. On the other hand female work participation rate is positively correlated and the relationship was more significant in 1991 (0.600) than in 2001 (0.061). This could be because of the fact that female work participation is higher in many of the less developed states.

Table 9 : Correlation Matrix (State-level Analysis): 1991 and 2001

Child Labour	1991	2001
(1)	(2)	(3)
Child Labour	1.000	1.000
Literacy Rate	-0.530*	-0.607*
NSDP per Capita	-0.180	-0.210
Poverty Rate	-0.045	0.378
Female WPR	0.600*	0.061
Rate of Urbanisation	0.084	-0.240

Note: * = Correlation is significant at the 0.05 level (2-tailed)

Source: Table 7 and 8

V. Inter-District Variations of Incidence of Child labour in Assam

Census of India provides the age-specific data on child population and child labour for the state of Assam. According to Census 1991, in Assam, the total child population in the age group 5-14 years constituted 26.8 per cent of the total population. Out of the total child population, child labours constitute 5.46 per cent. Table 10 shows that the highest concentration has been found in Dhemaji district (9.56), followed by Darrang (7.27), Kokrajhar (7.14), Karbi Anglong (7.08). Lakhimpur stands at 5th position with 6.89 per cent.

Table 10 : Percentage of Child Labour (main +marginal) in Districts of Assam (1991)

Sl. No.	District	Main Workers			Marginal Workers			Total Workers		
		P	M	F	P	M	F	P	M	F
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Dhubri	5.32	9.78	0.64	0.50	0.19	0.83	5.82	9.97	1.46
2	Kokrajhar	6.67	8.92	4.37	0.47	0.20	0.74	7.14	9.12	5.11
3	Bongaigaon	5.22	7.86	2.44	1.41	0.56	2.32	6.64	8.42	4.76
4	Goalpara	4.85	7.72	1.84	0.94	0.28	1.63	5.79	8.00	3.47
5	Barpeta	4.60	8.10	0.93	0.62	0.20	1.07	5.22	8.30	2.00
6	Nalbari	3.12	4.74	1.42	1.29	0.38	2.24	4.41	5.12	3.65
7	Kamrup	3.65	4.98	2.31	0.81	0.28	1.34	4.46	5.27	3.65
8	Darrang	5.35	8.22	2.34	1.92	0.66	3.24	7.27	8.88	5.57
9	Sonitpur	5.05	6.43	3.62	1.29	0.55	2.05	6.33	6.97	5.67
10	Lakhimpur	3.93	5.12	2.72	2.96	1.84	4.11	6.89	6.96	6.83
11	Dhemaji	5.47	6.32	4.60	4.08	2.22	6.00	9.56	8.54	10.60
12	Marigaon	5.32	9.51	0.93	1.17	0.23	2.15	6.48	9.74	3.08
13	Nagaon	4.41	7.65	1.05	1.15	0.54	1.79	5.56	8.18	2.84
14	Golaghat	4.42	5.03	3.78	1.28	0.77	1.81	5.70	5.80	5.59
15	Jorhat	3.01	3.29	2.71	0.79	0.60	1.00	3.80	3.89	3.70
16	Sibsagar	3.15	3.20	3.09	0.83	0.75	0.91	3.98	3.96	4.00
17	Dibrugarh	3.09	2.78	3.41	0.96	0.63	1.30	4.05	3.41	4.71
18	Tinsukia	4.05	4.27	3.81	1.25	0.84	1.68	5.29	5.10	5.49
19	Karbi Anglong	5.88	6.53	5.21	1.20	0.52	1.92	7.08	7.05	7.12
20	N. Cachar Hills	2.84	2.86	2.83	0.91	0.66	1.18	3.76	3.52	4.01
21	Karimganj	2.71	4.63	0.71	0.38	0.26	0.49	3.08	4.89	1.20
22	Hailakandi	3.15	1.20	3.61	0.08	1.98	0.27	3.22	3.18	3.88
23	Cachar	3.02	4.38	1.63	0.50	0.29	0.71	3.51	4.67	2.34
	Assam	4.33	6.25	2.33	1.13	0.54	1.73	5.46	6.80	4.07

Source: Census of India, 1991

The table 11 shows district wise percentages of child workers (main + marginal) in 2001. It is observed that the incidence of child labour in Lakhimpur (27.33) district was reported as highest, followed by Dhemaji with 8.65 per cent. During the period 1991-2001, the increasing trend of child labour in Lakhimpur district was found to be remarkable. Except for Lakhimpur, Jorhat and Hailakandi in rest of the districts, work participation rate of children had decreased during the period 1991-2001.

Table 11 : Child Workers in Districts of Assam: 2001 (Main + Marginal Workers)

Sl. No.	District	5-9 Years			10-14 Years			5-14 Years		
		P	M	F	P	M	F	P	M	F
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	Kokrajhar	1.87	1.99	1.74	9.78	10.88	8.59	5.59	6.19	4.95
2	Dhubri	0.60	0.84	0.35	7.97	12.57	2.83	3.94	6.26	1.45
3	Goalpara	0.95	1.11	0.77	8.58	11.84	5.00	4.45	6.10	2.69
4	Bongaigaon	0.75	0.86	0.64	6.91	9.22	4.40	3.66	4.86	2.39
5	Barpeta	0.81	1.01	0.60	7.36	10.78	3.60	3.78	5.51	1.94
6	Kamrup	1.27	1.42	1.12	5.58	6.57	4.55	3.45	4.02	2.85
7	Nalbari	1.27	1.39	1.15	5.41	6.34	4.44	3.35	3.88	2.80
8	Darrang	1.10	1.27	0.94	7.48	10.15	4.60	4.10	5.48	2.64
9	Marigaon	1.32	1.68	0.93	9.62	13.99	4.96	5.13	7.38	2.77
10	Nagaon	0.94	1.20	0.67	7.28	10.87	3.52	3.90	5.73	2.00
11	Sonitpur	1.11	1.21	1.02	7.14	8.12	6.10	4.05	4.61	3.48
12	Lakhimpur	14.37	14.55	14.19	41.08	42.62	39.47	27.33	28.26	26.38
13	Dhemaji	2.83	2.83	2.84	14.71	14.70	14.71	8.65	8.69	8.60
14	Tinsukia	1.45	1.55	1.34	7.37	7.25	7.51	4.33	4.33	4.33
15	Dibrugarh	1.58	1.56	1.60	6.94	6.62	7.28	4.24	4.08	4.41
16	Sibsagar	1.35	1.43	1.27	7.16	7.23	7.09	4.26	4.35	4.17
17	Jorhat	2.55	2.63	2.47	11.27	11.57	10.94	7.01	7.22	6.78
18	Golaghat	1.29	1.32	1.25	8.16	8.40	7.89	4.70	4.86	4.54
19	Karbi Anglong	2.36	2.39	2.34	10.18	10.06	10.31	6.02	6.00	6.04
20	N. Cachar Hills	1.30	1.36	1.22	5.11	4.95	5.27	3.20	3.16	3.25
21	Cachar	1.09	1.18	1.01	5.32	6.96	3.61	3.17	4.02	2.30
22	Karimganj	0.96	1.09	0.83	5.87	8.24	3.40	3.32	4.53	2.07
23	Hailakandi	1.06	1.13	0.98	8.23	11.03	5.35	4.45	5.80	3.06
	ASSAM	1.69	1.83	1.55	8.72	10.52	6.80	5.07	6.03	4.06

Note : P = Person, M = Male and F = Female

Source : Census of India, 2001

The incidence of child labour is an important indicator of economic development of a district. It is observed in the table 12 that some districts have succeeded in reducing the child labour problem. They are Barpeta, Dhubri, Bongaigaon, Sonitpur, Darrang, Tinsukia, Goalpara and Golaghat. The child labour problem in 2001 remains the same in districts like Lakhimpur, Dhemaji, Karbi Anglong, Kokrajhar and Marigaon as during 1991. But Jorhat district has witnessed an increasing trend of child labour.

Table 12: Relative Concentration of Child Labour 1991, 2001

Nature of Incidence (Percentage of Child Workers)	1991	2001
(1)	(2)	(3)
Low (below 4 %)	Sibsagar, Jorhat, N.C.Hills, Cachar, Hailakandi, Karimganj	Dhubri, Nagaon, Barpeta, Bongaigaon, Kamrup, Nalbari, Karimganj, NC Hills, Cachar
Medium (above 4%)	Dibrugarh, Nalbari, Kamrup	Sonitpur, Darrang, Dibrugarh, Sibsagar, Tinsukia, Hailakandi, Goalpara, Golaghat
High (above 5%)	Barpeta, Tinsukia, Nagaon, Golaghat, Goalpara, Dhubri, Sonitpur, Marigaon, Bongaigaon, Lakhimpur, Karbi Anglong, Kokrajhar, Darrang, Dhemaji	Lakhimpur, Dhemaji, Jorhat, Karbi Anglong, Kokrajhar, Marigaon

Source: Table 3.17, Table 3.18 and 3.19

VI. Correlates of Child Labour: District Level Analysis

The state of Assam is basically characterized by its rural economic nature, where nearly 88 per cent of the total population resides in rural areas. There are some other characteristics of the state, like, high level of illiteracy, high level of poverty, low level of per capita income, higher percentage of ST and SC population which have influenced the work participation of children and hence a considerable number of children are found in the workforce.

Table 13 : Correlates of Child Labour of Assam (1991)

Sl. No.	Distriet	% of Child Labour (1991)	% of Literacy (1991)	% of Urban Popula-tion	Per Capita GDDP (1993-94)	% of ST Popula-tion	% of SC Popula-tion
(1)	(2)	(3)	(4)	(6)	(7)	(8)	(9)
1	Dhubri	5.82	38.31	11.62	5875	2.42	4.82
2	Kokrajhar	7.14	40.57	6.77	6666	41.15	3.76
3	Bongaigaon	6.64	49.06	12.14	5837	17.53	10.74
4	Goalpara	5.79	46.81	8.15	5892	17.23	5.50
5	Barpeta	5.22	43.24	7.61	6534	7.97	6.54
6	Nalbari	4.41	55.99	2.37	5978	17.67	8.78
7	Kamrup	4.46	65.04	35.79	8758	10.72	7.54
8	Darrang	7.27	42.00	4.92	4740	17.32	4.95
9	Sonitpur	6.33	48.14	8.82	6031	10.71	5.69
10	Lakhimpur	6.89	58.96	7.31	7208	23.57	8.01
11	Dhemaji	9.56	53.84	6.85	6191	43.92	6.37
12	Marigaon	6.48	47.99	4.90	5282	15.40	13.78
13	Nagaon	5.56	54.74	12.01	5991	3.69	10.02
14	Golaghat	5.70	58.54	8.35	6496	10.25	5.59
15	Jorhat	3.80	65.51	16.86	6955	12.09	7.61
16	Sibsagar	3.98	64.46	9.21	9940	4.68	4.95
17	Dibrugarh	4.05	58.32	18.77	8062	7.95	4.02
18	Tinsukia	5.29	50.28	19.48	9998	5.35	2.61
19	Karbi Anglong	7.08	45.57	11.45	5922	51.56	4.22
20	N.Cachar Hills	3.76	57.76	31.18	14060	65.54	2.60
21	Karimganj	3.08	54.71	7.27	6309	0.17	14.58
22	Hailakandi	3.22	53.07	8.29	5813	0.16	12.05
23	Cachar	3.51	59.19	13.94	6675	1.36	14.70

Source : Assam Human Development Report 2003; Statistical Hand Book, Assam, 2001

Table 14 : Correlates of Child Labour of Assam (2001)

Sl. No.	Distriet	% of Child Labour (2001)	% of Literacy	% of Poor Popula-tion	% of Urban insation	Per Capita GDDP (2000-01)	% of ST Popula-tion	% of SC Popula-tion
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Dhubri	3.94	48.21	31.98	11.66	6801	1.97	5.85
2	Kokrajhar	5.59	51.63	31.51	6.84	7643	33.67	37.11
3	Bongaigaon	3.66	59.33	24.03	12.17	11081	12.23	22.49
4	Goalpara	4.45	58.03	26.30	8.18	7619	16.03	20.83
5	Barpeta	3.78	56.24	22.83	7.62	12040	7.48	13.18
6	Nalbari	3.35	67.24	15.63	2.41	8169	17.63	25.14
7	Kamrup	3.45	74.16	17.44	35.81	22292	9.93	16.67
8	Darrang	4.10	55.44	23.30	4.91	7466	16.61	21.16
9	Sonitpur	4.05	59.00	24.68	8.81	8323	11.60	16.83
10	Lakhimpur	27.33	68.56	20.23	7.32	8341	23.49	31.37
11	Dhemaji	8.65	64.48	19.60	6.91	7602	47.29	52.62
12	Marigaon	5.13	58.53	20.28	4.91	19513	15.55	28.48
13	Nagaon	3.90	61.73	19.16	12.00	17707	3.86	13.16
14	Golaghat	4.70	69.38	14.52	8.37	16723	9.93	15.33
15	Jorhat	7.01	76.33	21.94	16.91	12792	12.32	20.20
16	Sibsagar	4.26	74.47	10.31	9.22	21779	7.95	7.35
17	Dibrugarh	4.24	68.96	13.98	18.77	8081	7.45	11.51
18	Tinsukia	4.33	60.95	29.14	19.49	8295	5.85	8.57
19	Karbi Anglong	6.02	57.70	33.52	11.42	9638	55.69	59.32
20	N.Cachar Hills	3.20	67.62	31.44	31.19	17296	68.28	70.07
21	Karimganj	3.32	66.24	33.38	7.33	8880	0.29	13.28
22	Hailakandi	4.45	59.64	27.00	8.39	7758	0.15	11.07
23	Cachar	3.17	67.82	29.22	13.97	11621	1.29	15.70

Note: % = Percentage, ST = Scheduled Tribe, SC = Scheduled Caste
Source: Statistical Hand Book, Assam, 2007

Table 15 : Correlation Matrix for District Level (1991)

Child Labour	Literacy Rate	Urban-ization	Per Capita DDP	ST Popula-tion	SC Popula-tion	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Child Labour	1.000					
Literacy Rate	-0.5.12*	1.000				
Urbanization	-0.409	0.385	1.000			
Per Capita DDP	-0.391	0.450*	0.623**	1.000		
ST Population	0.446*	-0.136	0.058	0.341	1.000	
SC Population	-0.289	0.196	-0.244	-0.433*	-0.444*	1.000

Note : DDP = District Domestic Product, ST = Scheduled Tribe,
SC = Scheduled Caste
* = Correlation is significant at the 0.05 level (2-tailed)
** = Correlation is significant at the 0.01 level (2-tailed).
Source : Table 13

Table 16 : Correlation Matrix for District Level (2001)

Child Labour	Literacy Rate	Poverty	Urban-ization	Per Capita DDP	ST Popula-tion	SC Popula-tion	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Child Labour	1.000						
Literacy Rate	0.160	1.000					
Poverty	-0.121	-0.557**	1.000				
Urbanization	-0.182	0.409	0.058	1.000			
Gross Capita DDP	-0.184	0.507*	-0.452*	0.439*	1.000		
ST Population	0.184	-0.039	0.249	0.182	-0.011	1.000	
SC Population	0.204	-0.029	0.295	0.146	-0.013	0.978	1.000

Note : DDP = District Domestic Product, ST = Scheduled Tribe,
SC = Scheduled Caste
* = Correlation is significant at the 0.05 level (2-tailed)
** = Correlation is significant at the 0.01 level (2-tailed).
Source : Table 14

From the table 15 and table 16 it is observed that the correlation between literacy rate and child labour in the year 1991 was negative and highly significant. But in the 2001 census period the relation appears to be positive

and however, not very significant. In 2001, the relation between poverty and child labour is also found to be negative. The incidence of child labour is negatively correlated with urbanization and the relation was more significant in 1991 than 2001. Similarly, per capita Gross District Domestic Product is also negatively correlated and the relationship was strong in 1991(-.391) in comparison to 2001(-.184). There is a positive relationship between Scheduled Tribes population and the incidence of child labour. In 1991 the relation was quite strong (.446) compared to 2001 (.184). In 1991 there was a negative relationship between Scheduled Caste population and incidence of child labour, but the relation has changed in 2001. In 2001 the relationship becomes positive, however, not very significant.

VII. Conclusion

The analysis of the extent of child labour in India and also in Assam brings out clearly the fact that in spite of so much of progress on the economic front, child labour remains one of the key concerns in the country. There are wide variations in the extent of child labour in the states of India. The correlation analysis presented above suggests that child labour is the result of high poverty level, illiteracy, poor economic growth including low per capita income, higher share of vulnerable sections of the society, like ST and SC in total population, etc. So to tackle the problem of child labour some initiatives, like poverty alleviation programme, educating parents and adults, improving literacy, providing free and compulsory education for children below 15 years should be taken up. However, poverty and lack of economic development may not be the only factor affecting the incidence of child labour. Levels of education and literacy have been found to have a deterring effect on the incidence of child labour.

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Khadas of Sikkim : Interpreting its Religious and Economic Significance

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Abstract

A very prominent and tangible aspect of the Sikkimese culture is the custom of using and offering of Khada on various occasions. For a Sikkimese, Khada is a symbol that conveys the message of respect, gratitude and blessings. Although the custom of using Khadas has its origins in Tibet, it was introduced in Sikkim by the Bhutias who migrated from Tibet. Once using of Khada was a distinct cultural trait of the Bhutia community but later on Khada has been assimilated in the culture of other communities of Sikkim as well. Presently, Khada has become an integral part of the Sikkimese culture and is popular among all the ethnic communities of Sikkim. In this backdrop, the paper attempts to interpret the religious meanings and economic significance of the Khadas in Sikkim.

Keywords : *Khadas*, Sikkim, Culture, Religion, Economy.

Introduction

Humans are to a great extent shaped by their culture. Although it may not be obvious but the way we think, what we do and the individuals that we become have a lot to do with our culture. According to Macionis (2006:58-59) culture allows human beings to create varied ways of life and thereby accord them with distinctiveness from one another. Geertz (1973) defines culture as "a historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about and their

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attitudes toward life." For him culture is made up of the shared practices and understandings which exist in a society and are to a certain extent thought to be founded on shared meanings that are public, therefore making them lesser a product of individual mental processes. Human beings learn their culture, but unlike other animals they do it through symbolic learning which is based on their un-parallel ability to use language and to utilize and comprehend the meaning of symbols.Humans possess the ability to transform elements of the world into symbols and accord them meaning (Macionis, 2006:61-62). For humans symbols designate cultural representation of reality. Symbols are culture specific i.e., each culture possesses its own symbols and each symbol connotes meaning which can be understood only by the members of that culture. Symbols occur in varied forms. They may be verbal (linguistic) or non-verbal (object), written or unwritten.Thus anything that communicates a meaning such as words, numbers, physical artifacts, images and physical action can be considered to be symbols (Ritzer, 1996:349). According to Charon (1985:39) "Symbols are social objects used to represent ('or stand in for,' 'take the place of') whatever people agree they shall represent.

Coming to Sikkim, the Sikkimese society has a distinct culture of its own and one very prominent and tangible aspect of the Sikkimese culture is offering of *Khadas*. *Khadas* are used and offered frequently during various occasions by all the communities in Sikkim and thus can be considered to be one of the most pervasive and common of all cultural symbols in Sikkim, and one that transcends the barriers of ethnic relations. The paper attempts to trace the origin of *Khadas*, its religious and economic significance and its acceptance by the different ethnic groups in Sikkim as a cultural symbol.

Sikkim : A Brief Profile

Sikkim, a small Himalayan state of India, is a multi-cultural, multi-ethnic society and home to many cultural-linguistic groups of which the Lepchas, the Bhutias and the Nepalis form prominent communities. In terms of religious affiliation, the population of Sikkim predominantly consists of Hindus (68 per cent), followed by Buddhists(27 per cent), while Christians make up for only 3 per cent of the total population. Furthermore, a small portion of the population chiefly the Lepchas and the Nepalis of Mongoloid stock still continue to practice animism (Gurung,2011:92). Although there is marked social interaction between the three communities, they still have been able to maintain their cultural individuality to a pronounced degree (Sinha,2008:29). Nonetheless a *Khada* is equally used and recognized as a cultural symbol by all the communities in

Sikkim. Once restricted to only the Bhutia community, *Khada* has been adopted by all the other communities in Sikkim with time. This may be attributed to economic and political supremacy of the Bhutias over the rest of the Sikkimese communities during the early 19th century up to the merger of Sikkim in Indian Union and also due to increase in everyday inter- ethnic proximity and interaction between these communities.

Khadas

A *Khada* looks like a stole or a scarf. It is also called *Khatag* or *Khata* in Tibetan dialect but in common parlance of Sikkim it is generally known as *Khada*. In olden days, *Khadas* were usually made of silk but the *Khadas* used these days are found to be made of cotton or synthetic material and rarely that of silk. *Khadas* are either plain or adorned with propitious Tibetan symbols or mantras. One can find them in a wide range of colours such as white, ivory, blue, green, yellow and red. A *Khada* is an important element of the Sikkimese culture and is used during almost all the occasions, festivals and ceremonies. In Sikkim, *Khadas* are offered as a token of one's well wishes, respect, gratitude and blessing. *Khada* is also believed to be symbolic of unity.

Origin of *Khadas*

The origin of *Khada* seems quite murky but it is widely believed that the custom of using *Khada* originated in Tibet. Knowledge about its origin has been passed down through generations as oral tradition. One such account can be found in an anecdote revolving around Guru Padmasambhava[1]. It is said that the Tibetan King Trisong Detsen[2] requested Guru Padmasambhava to come to Tibet to impart the teachings of Buddhism. They decided to meet at the bank of the YarlungTsangpo River in Tibet. When they met, the King expected Guru Padmasambhava to pay obeisance to him. But Guru Padmasambhava saw himself as mightier than the king and waited for the king to bow to him. Neither man bowed to the other. Sensing the arrogance of the King, Guru Padmasambhava made a small hand gesture as if to salute him and that very moment flames shot out of his finger and surrounded the king, even burning him a little bit. Admitting Guru Padmasambhava's power the king bowed down on the ground but the smoke stifled him, so he reflexively drew the scarf he was wearing round his neck and offered it to Pabmasambhava who acknowledged it and in turn put it around the King's neck as a mark of blessing. Accordingly the giving of *Khada* was started in Tibet by Guru Padmasambhava.

According to another legend it is believed that *Khada* came into existence probably around the 7th century AD during the rule of the King Song Tsen Gompo[33]

He is said to be the founder of the Tibetan Empire and by tradition held to be the thirty-third ruler of the Yarlung Dynasty. He is traditionally credited with being the first to bring Buddhism to the Tibetan people.It is said that the ministers and subjects who accomplished good work were presented with the skin or fur of a valued animal usually tiger, leopard, fox etc., as incentives by King Song Tsen Gompo. Around 8th century, the then King Trisong Detsen, Guru Padmasambhava and other leaders discouraged the practice of presenting animal skin, as animals had to be killed for the fur or skin. Taking inspiration from the then Indian tradition of giving presents of fresh set of clothing to the teachers or Gurus, the skin of prized animals was soon swapped with expensive brocades from China which with the passage of time took the form of scarves made of cotton or silk which is the present day *Khada* (http:// www.tibetanprayerflag.com/products.php?cat=5).

Types of *Khadas*

Basically there are two types of *Khada*. The first kind is the simple plain *Khada*. It is either made of cotton, silk or synthetic material; devoid of any designs, texts, symbols or mantras. This kind of *Khada* can be used in almost all events or occasions and is generally taken to be a common *Khada* and comes in various shades of white or ivory. The second kind of *Khada* looks quite ornamental, has the Tashi Tagay (the Tibetan Eight Lucky Symbols) printed on it and comes in different colours of blue, white or ivory, red, yellow and green. As stated earlier *Khadas* are available in different sizes which are of varying length and breadth. Fancy looking *Khadas* have the 'Tashi Tagay' inscribed on them and towards the two ends of the *Khada* there are some words etched in Tibetan language. The words are "*Tashi Delek, Phyun Shumk Tsok*" which translates as "May all that You Wish for Come true". Similarly, *Khadas* which are longer in length and quite expensive have extra four rows of biddings in Tibetan language and each row signifies different meanings. The first row "*Kunchok Sum Gyi Tashi Shoo*" means "May the Buddha, his teachings and his disciples who showed the way bless everything that you do." The second row, "*Nyin Tsen Tak Toe Delek*" connotes "May your day as well as your night be auspicious". The third row "*Nyimae Gong Yang Delek Shoo*" signifies "May your day too be very auspicious". And the last row has "*Nyimo Delek, Tsen Delek*" which translates as "Wish you a Good Day And a Good Night".

Religious Significance of *Khada*

Khada has its roots in Tibetan Buddhism. It is a sacred and indispensable element which is used in all the rites and rituals by a Sikkimese Buddhist. Customarily people in Sikkim put *Khada* over altars, holy sites, statues, and images of Gods, Goddesses and Rinpoches (reincarnated revered monks). Even during worship and rituals it is offered to pay homage to the deities as well as to appease one's ancestors. *Khadas* are also tied around Prayer Flags before being erected to symbolise honesty and pureness of one's prayer, and also as a present to the gods so that God would answer one's prayers and requests soon. Even the different colours of *Khadas* have a religious connotation as discussed in the following section.

The religious significance of the different colours of *Khadas*

Although the most ubiquitously used *Khadas* are the modest plain ones in white/ivory, the coloured ones also have their own significance and are widely used. According to Kumar (2000), colour is symbolic in Tibetan Buddhism, thus each colour connotes a specific meaning. The Tibetan colour symbolism consists of five colours namely white, blue, green, yellow and red, also known as Panch-varnam. Each colour symbolizes a state of mind, a natural element, a celestial Buddha, a part of the body or a part of the mantra. *Khadas* are available only in the above mentioned five colours. The symbolic implications of the colour of the *Khadas* are explained in the table given below:

Table 1 : Religious Significance of different colours of *Khada*

Colours	Elements	Symbolic meaning of colours
White	Water	Purity, longevity and learning
Blue	Air/ Sky	Wisdom and healing
Green	Wood	Balance and youthful energy
Yellow	Earth	Humility and rootedness
Red	Fire	Protection and power

Source: N. Kumar, 2002.Color Symbolism in Buddhist Art.

When all the colours of the VIBGYOR (the different colours present in the rainbow) converge together, the colour white is said to be formed. In Tibetan Buddhism, the Goddess Saraswati is exhibited as white toned thereby associating the colour white with learning and knowledge. Similarly White Tara, the Goddess of longevity, purity and cleanliness is portrayed as white

toned thus white represents the above mentioned qualities. Water symbolizes the colour white. The colour Blue signifies the sea and the sky and like the infinite sky it also expresses the endless possibilities of rising up. The Buddha of medicine or healing is depicted in blue as it is believed to have a cooling and healing effect. Lord Buddha chose the colour yellow as a sign of his humbleness and departure from materialist humanity. Yellow thus became a symbol for refutation and humility. Since it resembles the earth, it became synonymous with calmness and rootedness. Green occupies a position in the middle of the visible VIBGYOR and thus exemplifies the qualities of balance and harmony. It is the color of nature, trees and plants. Tibetan Buddhism always portrays the Green Tara(Goddess) as a young, naughty and spirited girl making green symbolic of youth and energy. Red is often used to paint sacred places like monasteries as it is believed to have protective qualities which expel negative vibes and is thus represented by the element fire.

Ways of offering a *Khada*

On the surface, offering a *Khada* may look like a very simple thing and most people are not aware of the fact that it follows a specific protocol. If the protocol is to be strictly followed then, while offering a *Khada* one should fold it in half along the length. This folding of the *Khada* in half signifies the mutual reliance of the one offering the *Khada* and the other to whom the *Khada* is being offered. One should also make sure that the open end of the *Khada* is in front of the person one is offering it to and the folded section is towards the individual giving it, which is an indication of genuineness and pureness of the giver's heart. Customarily *Khadas* are offered to pay homage, appreciation, apology and condolence. In addition it is also used to celebrate or mark the beginning of something auspicious and festive. During marriages family members, relatives, friends and guests congratulate the bride and bride-groom with *Khadas*. At house-warming events people tie *Khadas* on the main door of the house. When a person is apologizing after an argument, he offers a *Khada* along with a bottle of alcohol to whom he is making an apology. On the occasion of birthday also *Khada* is being offered by the relatives and the guests to the person whose birthday is being celebrated. During funerals people pay respect to the dead by offering a plain *Khada*.

Often people simply put *Khadas* around the neck of the person it is being offered to but one has to follow different rules while offering *Khada* under different circumstances. It should be kept in mind that one should never put a *Khada* around the neck of someone who is superior in status, position or in

age. Only those who are equal in these regard are eligible to put *Khada* on the neck. Thus when elders, teachers, monks, officials are involved then one has to give the *Khada* with tremendous respect. It requires a disciplined body language with hands holding the *Khada* near the forehead and head bent in reverence, then with a *namaste* the *Khada* is given into their hands. Customarily, the *Khada* is given back to the person who offered it, as a token of blessing, especially by Rinpoches, monks and teachers. Such *Khadas* are highly treasured and kept with great respect by the receiver.

Economic significance of *Khada*

Khadas are so expansively used in Sikkim but only a handful of people know where they come from, how they are made or who are the people involved in this trade. As there are no mills or factories in Sikkim that manufacture *Khadas*, they are brought in from Kalimpong, West Bengal. *Khada* is not manufactured in Kalimpong either, the raw materials for *Khada* are mostly fetched from Surat in Gujarat. They come in the form of *than* (bundles of cloth) which are then cut and embossed with Tibetan Mantras and symbols and given the shape and form of *Khadas* in Kalimpong. Usually *Khadas* with Tibetan inscriptions are more costly than the plain ones signifying the importance people give to these religious symbols. Even if people have to spend more in the embossed versions yet they do not mind to spend extra money for it carries more religious values.The businessmen who are wholesalers of *Khadas* and/or certain families in Kalimpong are involved in making *Khadas*. The trading of *Khada* is an organized enterprise which is dominated by the Tibetans and Madhesis(plainsmen). Selling *Khada* is a good business in the state as it is widely used. The whole sellers earn thousands of rupees everyday but do not want to reveal the exact amount. The demand of *Khadas* is so prevalent these days that they are found to be sold even in pan shops.

It is to be noted that there is variation in the price of *Khada*. It is between the ranges of Rs. 10 to 200, the least expensive *Khadas* are also the most frequently used. *Khadas* are used by almost all Sikkimese people but the costlier ones are mostly usually used during marriages, house warming ceremonies, festivities etc. *Khadas* are indispensable in a Bhutia marriage. Usually the bride's or the groom's family spend around 1000-2500 rupees on *Khadas* alone during marriages. Customarily a *Khada* once given should not be reused but a *Khada* by itself cannot serve any practical purpose either as a piece of clothing or decoration. Hence, it does not have any practical utility value. Still some people make use of the *Khada* by re-circulating them or using them for different insignificant purposes.

It has been observed that from around 1980's the Sikkimese Nepalis came up with their own version of *Khada* which more or less looks like the original *Khada*, except that it is made of Dhaka material (a type of traditional printed cloth used by Nepalis). This *Khada* is used mostly by the Sikkimese Nepalis. This innovation could be symbolic of the changing socio-political scenario in Sikkim after its merger with India implying the shift in power from the hands of the Bhutias, who were the ruling community in Sikkim till 1974 to the Nepalis who are in majority and are more active and vocal politically, socially and culturally in contemporary Sikkim.

Conclusion

In a nutshell, a *Khada* used mainly by the Bhutia community has been slowly adopted by other communities in Sikkim. Offering a *Khada* shows one's respect and gratitude and receiving a *Khada* signifies some sort of transition in one's life; birth, marriage, death. Now-a-days *Khadas* are a must even in any official occasions such as seminars, meetings, reception, farewell and so on. *Khadas* though practically not so useful indeed has deep religious and economic significance as it is considered a blessing to any relationship be it marital relationship, political relationship or business relationship. Infact, it has become a cultural symbol to all the ethnic groups in Sikkim.

1 Popularly known as Guru Rinpoche, he is believed to have brought Vajrayana Buddhism to Tibet, Bhutan and neighbouring countries in the 8th Century AD.

2 A Tibetan king whose contribution lies in the establishment of Buddhism in Tibet.

3 He is said to be the founder of the Tibetan Empire and by tradition held to be the thirty-third ruler of the Yarlung Dynasty. He is traditionally credited with being the first to bring Buddhism to the Tibetan people.

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A Study on Substitution of Yak Products with other available Products and its Marketing: Empirical Evidences from Tawang District of Arunachal Pradesh

Philip Mody✉ and Tenzing Gombu

Abstract

Tawang district of Arunachal Pradesh is well known for variety of Yak products. Basically, it includes both food and non-food based items. It is important to note that food items are valued more. However, non-food items made from yak is on constant decrease in the study area. Substitution is the main factor responsible for such decrease in non-food products made from yak. But demand of food items like chur (local cheese) is still high due to non-availability of its close substitutes. Also, the herders use traditional equipment instead of modern machinery in producing the products. Again, Brokpas (Yak herders) have opted for traditional technique over modern technique due to taste and quality preference. During the study it is found that majority of consumers of yak products are forced or compelled to substitute due to unavailability of yak products in the Tawang region. Declining numbers of yak herd and herdsman to take up yak rearing have been found to be the reasons for shortages in supply of yak products.

With this background, the present study made an attempt to study production and marketing of yak product in the Tawang District of Arunachal Pradesh. It has also tried to analyze substitution of yak products with other available product in the study area. Moreover, the study endeavored to examine intensity and reasons for substitution of yak products in the study area.

Keywords : Arunachal Pradesh; Brokpas; Monpas; Substitution; Tawang and; Yak.

Introduction

High up in the most western part of Arunachal Pradesh lies *Tawang* district which is situated at 3000 meters above mean sea level. *Tawang* valley begins with *Sela* pass with a beautiful lake, Yak and herders found along the street. The district of *Tawang* is dominated by *Monpas* and most of their economies and occupation are based on Agriculture and livestock. Livestock have been an integral component of *Monpas* rural economy since time immemorial. Livestock especially Yak and its associates is contributing largely for meeting food supplement and other essential raw materials for common masses of *Tawang* district (hereafter called as the Study Area). It has also contributed largely for the Agriculture production and still it is contributing significantly through draught power, organic manure and transport, moreover many home based garments and traditional attire are produced out of raw materials procured from Yak. But livestock now is more valued as source of food and nutrition. Various animals are domesticated by *Monpas* which ranges from Sheep, Pony, Pig, Goat, Cow and Yak etc. among all yak is regarded as most importance domesticated animal, because it is associated with the rural economy and deeply rooted into culture and religion of *Monpas* over the centuries.

Yak is the most important livestock for *Brokpa* (a pastoral community of *Monpa* tribes whose professional and livelihood is dependent on Yak raring and grazing) community of *Monpa* tribes inhabits in western most part of Arunachal Pradesh i.e. *Tawang* and West *Kameng*. Yak is the sole source of income for *Brokpas* living in the extreme climatic conditions. *Brokpas* have always played an important role in sustaining the range ecosystem by means of traditional norms and access strategies. Periodic migration by *Brokpas* from one place to other to ensure that natural resources are not used to the point of exhaustion and ultimate extinction.

In additional, their herd browses the vegetation, stump the soil, transport seeds of wild species and fertilize the land, all of which benefit the rangeland and the maintenance of its biological diversity. This kind of rangeland ecosystem can effectively be managed and sustained in a sustainable manner by local pastorals (Finklel and Derkhola 1991, and Kisamba- mugerwa 1995). The proper and traditional management system of yak is not only beneficial to *Brokpas* but it

also benefits local dwellers by providing necessary products and by promoting Eco-Tourism. Moreover today yak offer a unique opportunity by providing a domesticated livestock with investment potential. Yak can be readily cross-breed with cattle. They are spirited yet gentle, making them an enjoyable alternative livestock. The present study highlights the lifestyle and management of herd from various dimensions, in order to gain significant understanding of entire management system of yak, apart from raring and maintenance, understanding and study of various other aspects of yak management like Trading, Demand-Supply equilibrium, cost Benefit-Analysis of yak produce is inevitable for the proper understanding of entire Yak management and its relevance to people of *Tawang*.

Yaks are from the bovine family commonly called *Bos grunniens*. Yaks are native to the high Himalaya Mountains of Asia, which are adapted to harsh environment of altitude between 3000-6000 meters above mean sea level. Domestic yaks are about same size as ordinary cattle, they are colored yellowish-brown, brownish black, dirty white, or sometimes Piebald (black and white). Most of the native people of Himalayan areas are totally dependent on their yak herd to support their livelihood, because of less cultivable land available and harsh climatic condition. Yaks are highly valued by Himalayan people because of their contribution to human economy as milk, meat, hair, fiber, leather, dung for fuel and manure and as pack animal. Proper management of yak could support the rural economy by proving profitable employment opportunity and meeting the local demands. Yaks are considered extremely essential Domestic animal in *Monpa* society. *Monpas* economic, religious and cultural values are inherently influenced by the yak and its related products. *Tawang Monpas (Brokpa)* are living in the Himalayas. Over the centuries *Brokpas* are known for their unique system of raring and gazing animals. Herd structure and its gazing dependents on the climatic conditions and agriculture practices of the people in the area. They tailored their system in a way that it mutually benefits both villagers and the *Brokpas*. The unique understanding and coordination between *Mang* (the council of villagers headed by *Gaonbura*) and Brokpa is extremely essential for protection of village farmland and the proper Management of Yak herd. The pastoralists move their herds throughout the year to optimize utilization of range land resources for maximum meat and milk production. As a result of movement and grazing, the herds stay healthy and produce a reliable supply of milk and meat that meet the domestic demands of the *Brokpa*.

Objectives

The study endeavors to :

- Study Production and Marketing of Yak Products in the Study Area.
- Analyze Substitution of Yak products with other available products in the Study Area.
- Examine Intensity and Reasons for Substitution of Yak products in the Study Area.

Research Methodology

- **Research Method and Sources of Data:** The present research is based on both Primary and Secondary data. Primary data are collected through pre-tested questionnaire. In the light of study objectives a questionnaire has been prepared and tested in the field to test its adequacy and objectivity. Post-test amendments and modifications are made on the basis of pre-testing and properly modified questionnaire have been used for collection of final data. Further the data were also collected through face to face interview in order to establish rapport and explain the purpose of the study to respondents as this is the most accurate method for surveying the herders and illiterates who cannot read and write, which constitutes major portion of study population. Questions will be prepared in English but questions were asked in Local language *(Monpa Language)* to illiterates. For secondary data, various published, unpublished sources, data's facts and figures from Department of Animal Husbandry government of Arunachal Pradesh, Second hand data collected from office of District Veterinary officer, *Tawang* district, publications and resources of NRC (national research centre on Yak) and other reliable sources from *Tawang* District administration, publications and data's of NEDFi (North Eastern Development finance corporation) have been used.

- **Sampling Techniques and Size:** The result would be more accurate if the whole populations would be interviewed. But keeping in view of the time and resource constraints, only 5 to 15 respondents were selected on randomly by met by chance method from each circle (excluding *Lumla* and *Dudunghar* circle where numbers of yak is insignificant) which constitutes around 100 samples. In additional to above 2 to 3 Herders having highest numbers of Yaks and their experience in management above ten years from each circle were selected for interview purposively, which accounts around 20 samples and both having grand total of 120 (100+20). Direct participatory observation method was also adopted for in-depth information.

• **Tools of Analysis:** Keeping in view the requirement of the study, simple statistical techniques like Averages, their comparison and their percentage were used, to calculate the relation between seasonal variation and herd movement, cost benefit analysis, and to compare the means of cost and production from different circles, t-test, chi square test was adopted by using MS Excel and SPSS programmes.

• **Universe of Study:** The present study have been carried out in entire *Tawang* district of Arunachal Pradesh which is hereafter, called as the Study Area. In addition, the reference period of the present study extend over two years from 2011-12 to 2012-13. Field data over these two years are used for analysis for the present study.

Results

• Production and marketing of Yak products

Most of milk produced from yak is not consumed in fresh in the study area. Also, daily labor to deliver milk to every household is not possible for Brokpas either. So they usually prefer to tear the milk so produced and convert it into butter and cheese.

• **Production Method:** Preparation of cheese and butter can be through traditional techniques or by using modern light machinery which can be carried easily like Cream Separator. Traditional method is simple, labor intensive and tiresome. It requires continuous and unstoppable efforts while preparation. Interruption while preparing butter and cheese would lead to poor quality and less productivity. Equipment's used:

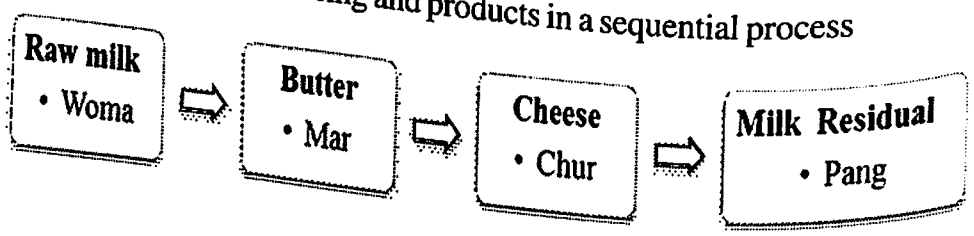
• Large vessel to store milk for short period i.e. few hours or 1 to 2 days

• Long cylindrical Container, locally called *DZOP*.

• A round disc like wooden churner fixed with long wooden rod (*GYALA*).

• Wooden ladle (*Kyo*) to pour and remove butter.

Diagram 1 : Milk processing and products in a sequential process



Source: *Field Study*

• **Process:** First milk is stored in a vessel when it totally filled or keeping it few hours, it is poured into *DZOP* (large cylindrical vessel) and it is churned using *GYALA*. The process lasts for few hours, and it is done by pushing the churner upwards and downwards. When the milk is churned into butter which floats on the top. It is removed using ladle. Milk residual after preparation of butter is called *Dara*. *Dara* is then processed for preparation of cheese (*Chur*). Milk residual is heated in a low flame to Coagulate. It is then passed through strainer called *Churtza*. Afterward, the *chur* is wrapped in a soft cloth and keep it for drying. Use of machinery for processing of milk products is very rare in the study area. Low and inaccessible power supply, training and awareness and diseconomy of setting up of heavy machinery is the main reason. Government has provided machinery which can be operated without power on pilot basis (cream separator) but it is not successful. Majority of samples from the study area has heard about the machinery which is being used for processing and preparation of milk products and highly labor saving but intensity of use is very poor and negligible.

• **Packaging**: Milk products are packed in various ways without using any modern packaging material. Most prevalent technique of packaging is to wrap and stich butter and cheese in leather bag. Packaging using leather bag is done in case of more lots, to preserve it for longer period and when consumers are not in proximity. Leaf is yet another packaging material used by herders. It is used for packing small lots and very temporary in nature and is used for selling small amount to consumers.

• **Storage:** Storing yak products are required when herders are pasturing their herd in higher altitudes and they are remaining in minimum contact with village. Storage is done after packaging of milk products in a leather bag. Cold climate of higher altitudes serve as natural cold storage and prevent it from decay. Herders never use and have knowledge of preservatives and additives to preserves their product for longer period; they are entirely dependent on nature and climate to prevent it from decay. When herders are pasturing nearby and within the proximity of consumers storage is never done. Whatever produced is being sold immediately to consumers or consumed by their family members.

• **Marketing**: Marketing is not a challenge to herders, demand of butter and cheese is very high, so it requires little time and effort to sell their products.

Marketing channel is very simple and intermediaries are practically negligible. Consumers from far flung area reach to herders in search of milk products. Often they are unable to meet the demands of consumers due to shortage of production and high demand. Forward integration in marketing is somewhat prevalent in the study area where pre-agreement in oral which is being made between the herders and village traders, herders carry their produced directly to the person with whom he made an agreement. Payments to herders are made either on cash or kind (rice, millet, maize and local alcohol). The trader then sell it to villagers or to nearby market.

Table 1 : Sales of Yak Products to various Categories of Buyers

Directly to Consumers	Traders in Market	Sale in the Market by Herders themselves	Pre-agreed Consumers
93.42%	2.43%	1.03%	3.12%

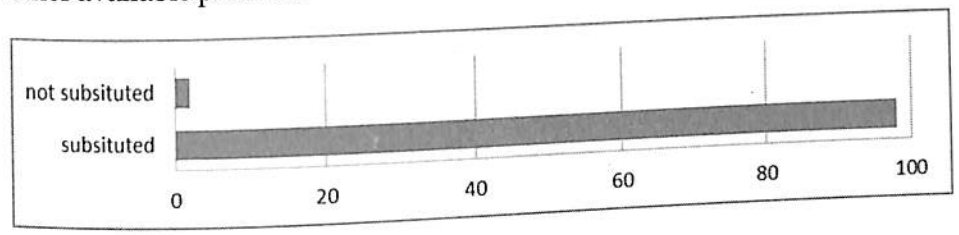
Sources : *Field Study*

It is observed from table 1 that yak products are sold directly to the consumers which account for 93.42 percent out of the total buyers. Likewise, pre-agreed consumers, traders, own selling by herders have occupied second, third and fourth places which account for 3.12 percent, 2.43 percent and 1.03 percent respectively. Also, it is imperative to note that *Brokpas* barely take their milk and its products to markets of the study area for sale.

- **Intensity and reasons for substitution of Yak products** : Substitution has become a global phenomenon. Almost every product has its substitutes, which is influencing or being influenced by that product. Law of substitution as stated by Marshal "if a person has a thing which can be put to a several uses, he will distribute it among those uses in such a way that it has the same marginal utility, for it had a greater marginal utility in one use then in another, he would gain by taking away some of it from the second use and applying it to the first". Substitution is a result of several factors like price, quality, taste preference, availability etc. Demand of a product is also the result of many factors like price, income, taste and preference, other related products & miscellaneous factors. It is revealed that the substitution of yak product in the study area is of forced substitution. Consumers are willing to buy quantity of yak products in good quantity especially food items but short supply has restricted them and they are substituting their shortfall with other available product in the market.

- **Substitution of Yak Products with other available products :** In case of Yak product various reasons for substitution which ranges from price, quality, taste preference and availability are found during the study period. Almost every consumer of yak products substitutes in their consumption with other products either highly or moderately.

Diagram 2 : Consumers' Response on Substitution of Yak Product with other available products

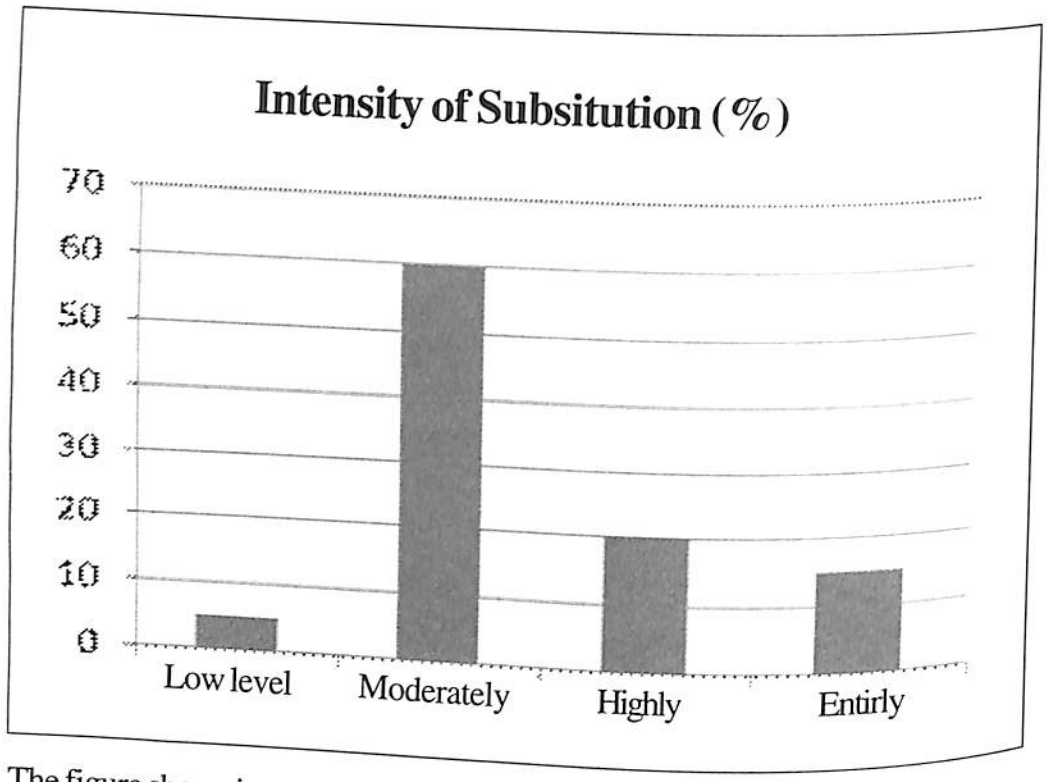


Sources : *Field Study*

It is unveiled from diagram 2 that almost every consumer of yak products has shifted their demand. More than 97 percent of respondent agreed that they have substituted consumption of yak products (Milk, Milk solids and Meat) with either locally available other products from Cow or externally supplied products like *Amul Tazaa*, butter, cheese etc. or combination of both. Again, out of total people who have substituted Yak products, 65 percent of people are found to have used combination of both externally supplied and locally available products for substituting the yak products.

- **Intensity of Substitution:** Consumers of Yak products especially milk are found to have been gradually substituting their consumption to other products. From diagram 3 it is revealed that consumers are shifting their demands, but mix of substitution can be seen as most of the consumers substituted moderately, which implies that even though they shifted their demand but instances or possibilities of returning to original demand provided there is a sufficient supply of Yak products. Again, 15 percent of consumers have substituted entirely and the possibility of returning or demanding yak products in future is almost nil even if they have sufficient supply of yak products. It is because, other available substitute products have more taste and cheaper too. The substitution rate of yak products is leading to a dangerous trend in the study area as people are either shifting or have already shifted to other products which is on constant rise.

Diagram 3 : Intensity of Substitution

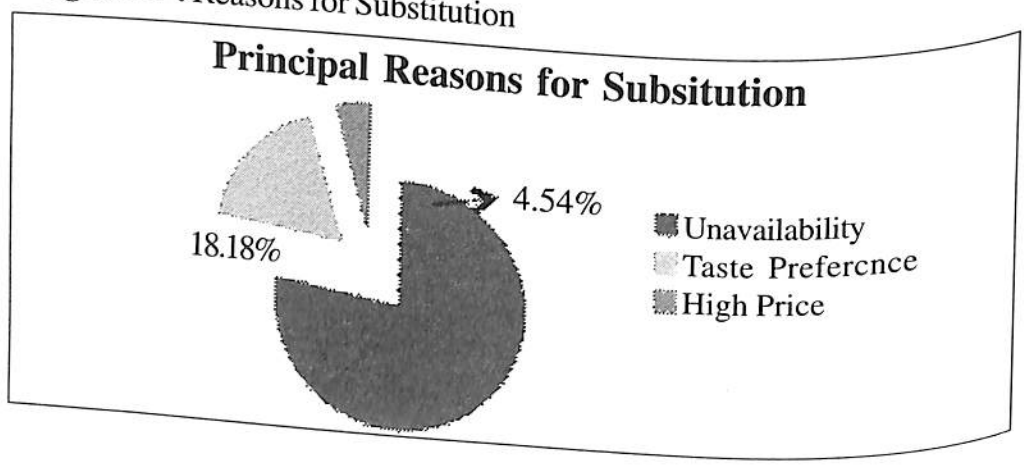


The figure shows intensity of substitution from low level to entirely

Source: *Field Study*

- **Principal Reason of Substitution:** Substitution is the function of various factors such as Price, Quality, Taste preference, Availability etc. It is lucid from the data collected that three prime reasons for shifting of consumers of yak products to other products viz- unavailability, taste preference and price. Among all reasons unavailability of yak products is cardinal.

Diagram 4 : Reasons for Substitution



Source : *Field Study*

From diagram 4 it is evident that demand of yak product is very high in the study area. Most of the consumers are ready to buy more of quantity than presently consuming if provided with yak product. 77.27 percent of the respondents opined that they are forced to substitute yak products due to its unavailability in the study region. Moreover, it is observed from diagram 4 that 18.18 percent of the total respondents hold views that yak products have been substituted due to availability of other products with higher degree of taste. Only 4.54 percent of the respondents have considered high price of Yak products as being the primary reason for substitution. Fascinatingly, relatively inelastic demand has been observed in the study area as consumer demand has not changed with slight changes in prices of the yak products. Also, it is found that supply of yak milk and its products has decreased due to decline in numbers of yak herd and herders.

Conclusion

Various products are being produced by yak herders in the study which includes both food and non-food based items. Yak product as food items is now more valued in the study area and non-food function of yak is decreasing slowly. Production technique is traditional in nature where herders use only traditional equipment's instead of modern machinery. In case of food products majority of herders are aware of few modern machinery but they opted for traditional technique due to taste and quality preference. Substitution is the main factor responsible for such decrease in non-food value of yak products. But demand of food items like chur (local cheese) is still high due to non-availability of close substitutes. From the available facts and figures it clear that most of the people substituted or included other products in their daily consumption pattern, they are shifted to either locally available, externally supplied products or combination of both, of which majority are forced or compelled to substitute due to unavailability of yak products and to meet the remaining demands of family. If provided with sufficient supply of yak products, most of the consumer prefers it over other products. Declining numbers of yak herd and herdsman to take up yak rearing would result in shortages of supply of yak and its related products. The impact of modernization can be seen on the demands of yak products like fur, leather and transportation which have cultural values among the people of study area. Substitution effect can be judged by measuring declining in the demands of fur and leather for local and traditional dress. Substitution of traditional

with modern attires also can be main reason for low demand of non-milk products of yak.

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Tourists' Willingness to Pay for Conservation of Environment in Eastern Himalayas : A Case Study of Arunachal Pradesh

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Abstract

Tourism and environment have close linkages. Environment acts as a source of attraction for tourists. But rapid growth of tourism in a fragile environment could lead to its degradation. Arunachal Pradesh has huge opportunities of tourism development due to its location in Eastern Himalayan region. The number of tourist inflow in the State is growing at a faster rate. This requires proper management of environment. It may involve huge cost. A part of the cost of can be raised from the tourists in the form of conservation fee. The study attempts to examine the tourists' willingness to pay and its determinants for conservation of environment in Eastern Himalayan region of Arunachal Pradesh. A high percentage of tourists were willing to pay for conservation of environment. Income and education were the main determinants of WTP. The study is expected to help the policy makers in designing appropriate policy of tourism development.

Introduction

Tourism, a service oriented industry,has been growing rapidly to become one of the largest and fastest growing economic sectors in the world. It provides employment to a large number of people worldwide. Tourism contributed 9.2 per cent of global GDP and forecasts that this will continue to grow at over 4 per cent per annum during the next ten years (WTTC, 2010). Tourism could be a means of redistributing economic resources, mitigating the socio-economic

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situation both at the local and national scale and contributing to biodiversity conservation (Gosslings, 1999: 304). For many developing countries, it has become a prime source of foreign exchange inflows (Wunder, 1999: 1).It is a major source of foreign exchange earnings for small countries like Nepal and Maldives. At the same time, tourism has a generally low negative impact on the environment compared to other productive sectors such as agriculture, cattle ranching and mining. Thus, tourism development in ecologically rich areas can be a potential 'win-win' component of the conservation strategies and practices.

India is a vast and varied country with rich historical and cultural heritage. It is rich in ethnic diversity, biodiversity and natural beauty.However, the country accounts for less than one per cent of international tourist arrivals worldwide. In 2004, India's share in international tourist arrivals worldwide was 0.45 per cent. It improved to 0.64 per cent in 2013. India is ranked 42nd in terms of its share in international tourist arrivals worldwide. The international tourist arrival in India has increased from 2.37 million in 1997 to 6.58 million in 2012. It rose to 6.97 million in 2013. The international tourist arrival in India grew at the rate of 5.93 per cent in 2013 over 2012 which is higher than the world average of 4.8 per cent. India, with a share of 1.54 per cent of the international tourism receipt worldwide in 2013, is ranked 16th in terms international tourism receipts (Indian Tourism Statistics 2013).

The North Eastern region of Indiawhich comprises of eight States namely, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura, is a paradise for tourists. The region falls in the Eastern Himalayan ranges and the topography of the region is mainly hilly and mountainous, small except river valleys and foot hills. The region accounts for around 8 per cent of the total geographical area of the country. It is rich in natural beauty, forest resources, rich biodiversity and diverse and splendid culture and tradition of different ethnic groups. However, the region receives less than one per cent of the total tourist arrival in the country. Arunachal Pradesh, one of the eight States of North East India,is an ideal destination for tourists. It has a huge potential for tourism development. It is rich in forest resources and biodiversity. It has 80.50 per cent of its total geographical area under forest cover which is one of the highest in India (State of Forest Report, 2011). The State is least densely populated with only 17 persons per sq. km (Provisional Census of India 2011) due to which vast forests and natural resources of the State are virgin and unspoiled.This makes it an ideal destination for ecotourism[1]. The

forests of the State are home to diverse species of plants and animals some of which are rare and endangered. At the same time, it is rich in natural beauty with presence of undulating topography, valleys and snow capped peaks. In addition, it is highly rich in cultural resources.Recognising its tourism potential, it has been adjudged as the fourth best destination in the world by the magazine '*Lonely Planet*'. It was also voted the most favourite upcoming destination by *Outlook Traveller* readers (The Times of India, May 8, 2013). But despite being rich in natural resources, it is one of the most backward States of India. In this context, tourism development can usher in a path of development that is ecologically sustainable.

Tourism and environment have a very complex and interdependent relationship. Natural environment of a destination acts as a source of attraction for tourists. But tourism growth may damage the very environment that attracts tourists (Tisdell, 1987: 15).This calls for cautious approach in promoting tourism in the State. There is a need to preserve and maintain the natural environment of the State which is the source of attraction for tourists. But management of environment may involve huge cost to the State government. The financial burden of government for conserving environment can be eased if tourists are made to pay for the benefits they receive from the natural sites (Bhandari, 2008: 131). So, effort should be made raise a part of the cost from the tourists in the form of conservation fee. This will also act as a regulatory tool on the number of tourists (Tisdell, 1987: 26). Hence, it is important to examine the tourists' willingness to pay for conservation of environment in the State. The present study makes an attempt to estimate tourists' willingness to pay and its determinants for environmental conservation in the Eastern Himalayas with Arunachal Pradesh as a study area. The study is expected to help the planners and policy makers in designing appropriate strategy for development of tourism.

The rest of the paper has been organised as follows. The second section discusses tourism potential and growth of tourist inflow in the State. The third section deals with data source and methodology. The fourth section deals with results and discussion. Last section deals with policy implications and conclusion.

Tourism Potential and Growth of Tourist Inflow

Arunachal Pradesh has an enormous potential for development of tourism. The tourists can enjoy its picturesque hills, dales, seasonal climate meet its people with beautiful arts, crafts and colorful festivals. The main tourist attractions of the State are discussed below:

Heritage Sites: Tawang, Bhismaknagar, Itanagar and Bhaluk pongare historical and heritage tourist spots. Tawang has a number of Buddhist monasteries.The most popular monastery is called the *Tawang monastery*[2].It is the largest monastery in the Himalayan region and the second oldest monastery in Asia. There is also a Stupa called '*Gorsam Chorten*[3]' at Gorsam village of Zemithang Circle. So, Tawang can be developed as a Buddhist tourist center.The historical *Bhalukpong fort* is situated at Bhalukong in WesteKameng district. The fort is believed to have been built during 10th -12th century A.D. by the king Bhaluka who ruled this place. The *Itafort* is historical fort built with bricksby Ahom Raja during 14th century A.D. It is located at Itanagar. *Bhismaknagar* is located in Dibang Valley district. It is a historical site whose name is derived from the king Bhismak who ruled this area during medieval period.

Pilgrimage Tourism: *Malinithan* and *Parshuram Kund*[4] are pilgrim centers of Arunachal Pradesh. *Malinithan* temple is a unique site as it has an ancient temple housing sculptures of Gods and Goddesses. It is located at Likabali. It is associated with the Lord Krishna legend. It is believed that Lord Krishna and Rukmini took a rest at this place. *Parshuram Kund* is a place where the Lord Parshuram is believed to have washed away his sin of matricide. Thousands of devotees come here for a holy dip in its sacred water on the occasion of *Makar Sankranti*[5].

Natural beauty : Arunachal Pradesh is well known for its scenic natural beauty. Its landscape is quite fascinating due to uneven topography, dense forest, flora and fauna, river valley, snow covered peaks, passes, lakes, waterfalls. Snow falls which occur during December and January in high altitude tourist spots like Bomdila, Tawang and Mechuka are fascinating to tourists. There are numerous mountain peaks and passes in the State like the *Kangte peak* in West kameng district and the *Gorichen peak* in Tawang district. The important passes are *Bomdila Pass*, *Sela Pass*, *Lumla Pass*. The major lakes are *Sangester Lake* and *Sela Lake* in Tawang district, *Ganga Lake* in Itanagar, *Mehao Lake* district and *Sally Lake* in Lower Dibang valley. This makes the State a fascinating destination for the eco-tourists.

Forest and biodiversity : Arunachal Pradesh is rich in forest resources and biodiversity. The State with forest covers of 67,410 sq. km is ranked second among the States of India. The forest covers in the State account for about 80.50 per cent of its total geographical area which is one of the highest among the States of India (State of Forest Reports, 2011). The important forest species found in the State are tropical, evergreen, semi-evergreen, deciduous,

pine, temperate, alpine and grassland. The forest of the State is an important attraction for tourists as it is houses diverse species of flora and fauna. Some of the species of plants and animals found in the State are rare and endemic. It accounts for 20 per cent of country's fauna and 50 per cent of the species of orchid found in the entire country. The State falls under Indo-Burma biodiversity 'hotspot' which is recognized as one of the mega biodiversity hotspot of the world (Chatterjee et al., 2006: 4). It can be developed as destinations of nature-based tourism and ecotourism.

Wildlife resources: Wildlife tourism is also a type ecotourism which promotes sustainable tourism and significantly contributes to sustainable development. In Arunachal Pradesh, there are two national Parks, namely *Namdapha National Park* and *Mouling National Park*, eight Wildlife Sanctuaries and one Biosphere Reserve which house diverse species of animals. Viewing wild animals can be a satisfying experience for tourists in the State (Lama, 2013: 335). This fact clearly reveals the State's potential to develop wildlife-based tourism.

Cultural diversity: Arunachal Pradesh is a home to 26 major tribes and 110 sub-tribes with rich cultural traditions. Each tribe has different dialects, tradition and culture. The added attractions are the colourful festivals which form essential aspects of socio-cultural life of the people of the State. Thus, Arunachal Pradesh is a wonderful destination for the cultural tourists and researchers.

Growth of tourist inflow

The tourist inflow in the State has been growing rapidly since 2004. In 2004 total tourist arrival in the State was 40088 which increased to 152,312 in 2008. In the year 2009 number of tourist arrivals in the State was 1, 99,092 which rose significantly to 231,252 in 2010. It further increased to 322378 in 2012 which is 35.46 per cent increase over previous year (Table 1). The trend and growth in tourist arrival is shown in Figure1.

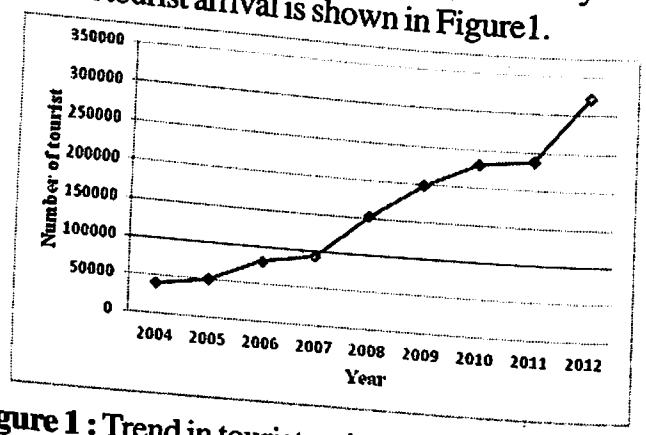

Figure 1 : Trend in tourist arrivals in Arunachal Pradesh

The growth rate of tourist inflow was found to be very high. During the period 2004 to 2012, the tourist inflow in the State grew at an exponential rate of 26.4 per cent per year. The high growth of tourist arrivals in the State can be attributed to determined effort made by the Government of Arunachal Pradesh to woo the tourists to selected tourist destinations of the State by organizing a number of tourist festivals and simplifying entry formalities and improvement in connectivity.

Table 1 : Tourist Arrivals in Arunachal Pradesh

Year	Domestic	Foreign	Total
2004	39767 (99.19)	321 (0.81)	40088
2005	50560 (99.38)	313 (0.62)	50873
2006	80137 (99.13)	706 (0.87)	80843
2007	91100 (97.63)	2212 (2.37)	93312
2008	149292 (98.02)	3020 (1.98)	152312
2009	195147 (98.02)	3945 (1.98)	199092
2010	227857 (98.53)	3395 (1.47)	231252
2011	233227 (98.00)	4753 (2.00)	237980
2012	317243 (98.41)	5135 (1.59)	322378

Note : The figures in the brackets indicate percentage of the total.

Source : Directorate of Tourism, Government of Arunachal Pradesh

Regarding the composition of tourists, it is important to note that domestic tourist constitutes a very high percentage of the total tourist in the State. On an average, foreign tourist accounts for only around 2 per cent of the total tourist arrivals in the State. In the year 2011 foreign tourists accounted for only 2 per cent of total tourist arrivals in the State. The relatively proportion of foreign tourists visiting the State may be due to its remote location, inaccessibility, lack of proper infrastructure, lack of proper marketing strategy and entry restrictions (as foreign tourists need Protected Area Permit (PAP) to visit the State). The procedure for obtaining PAP is reported to be very complex and time consuming. This acts as a disincentive for potential foreign tourists intending to visit the State (Mitra and Lama, 2013: 713).

An attempt was also made to examine the share of Arunachal Pradesh in total tourist inflow in the North Eastern region.It showed that the share of the State in tourist inflow in the region is one of the lowest. In 2012 the region received 6,72,9735 tourists out of which 6,66,3433 were domestic tourists and 66,302 were foreign tourists. Arunachal Pradesh accounted for 4.76 per cent of domestic tourist and 7.74 per cent of foreign tourist inflow in the region in 2012.Its share in total tourist inflow in the region was 4.79 per cent (Table 2).

Table 2 : Percentage shares of North Eastern States in tourist inflow the region in 2012.

States	Domestic	Foreign	Total
Assam	67.70	26.46	67.30
Meghalaya	10.21	8.01	10.19
Sikkim	8.38	39.95	8.69
Tripura	5.43	11.82	5.49
Arunachal Pradesh	4.76	7.74	4.79
Manipur	2.02	1.13	2.01
Mizoram	0.96	1.12	0.97
Nagaland	0.53	3.75	0.56
NER Total	100	100	100

Source : Computed using data from Indian Tourism Statistics 2012.

It is ranked fifth among the States of North East India in terms of its share in tourist inflow in 2012 (Indian Tourism Statistics, 2012). But its share is observed to be growing over the years. Its share has improved from 2 per cent in 2006 to 4.79 per cent in 2012. Assam occupies first rank in terms of its share in domestic tourist as well as total tourist inflow in the region followed by Meghalaya and Sikkim. But in case of foreign tourist inflow in the region Sikkim accounts for the highest share (39.95) followed by Assam (26.46 per cent). The high shares of Assam and Sikkim can be attributed to better accessibility as well as better facilities provided to facilitate tourists. The relatively low share of Arunachal Pradesh in the total tourist inflow in the region can be attributed to its remoteness, infrastructural deficiency, lack

of proper marketing strategy and entry formalities (as domestic tourists need to obtain Inner Line Permit (ILP) and foreign tourists need Protected Area Permit (PAP) to visit the State.

Data Source and Methodology

The study is empirical in nature and is mainly based on primary source of data. However, secondary sources of data were used wherever necessary. The secondary data used in the study were collected from the Directorate of Tourism, Government of Arunachal Pradesh; Ministry of Tourism, Government of India; and other sources. The primary data were collected though survey of tourists in selected tourist spots of the State. The survey was conducted with the help of well framed pre-tested questionnaire during peak tourist seasons in 2010 and 2011. The questionnaire was designed to obtain information relating socio-economic characteristics of the tourists, travel related information and willingness to pay for environment. Face-to-face interview technique was used to collect information from the tourists who had completed their tour and stationed at hotels and lodges. The sample of tourist was selected by random sampling technique. However, a stratified random sampling technique was used to determine the proportion of Indian and foreign tourists. In the sample only those tourists, who had defined a source of income, were selected. The data were analyzed using various statistical tools. In total 309 tourists were surveyed out of which 90 per cent were domestic tourists and the rest were foreign tourists.

The contingent valuation method (CVM) was used to elicit tourists' willingness to pay for environmental conservation. This method is used when markets do not exist for environmental resources (Mitchell and Carson, 1989). This method uses survey to ask the people about their willingness to pay (WTP) for improved environment or willingness to accept (WTA) compensation for damaged environment. There are two approaches to elicit WTP or WTA bids, viz. (i) an open-ended referendum and (ii) a close-ended referendum. A closed-ended format tends to anchor the respondent's answer to a range of values presented. Hence, in the present study an open-ended referendum was applied to elicit tourists' willingness to pay.

The WTP amount is expected to be influenced by the variable like income, education, age and gender, etc. In functional form, it may be written as :

$$WTP_i = f(Y_i, E_i, A_i, G_i)$$

The linear form of this function is:

$$WTP_i = \beta_o + \beta_1 Y_i + \beta_2 E_i + \beta_3 A_i + \beta_4 G_i + \varepsilon_i$$

Where,

WTP_i = Willingness to pay (WTP) of i^{th} tourist

Y_i = Annual household income

E_i = Level of education

A_i = Age

G_i = Gender

ε_i = Error term

The various statistical tools were used to analyze the data. The regression technique was used to examine the determinants of WTP. The data were processed with help of SPSS package.

Results and Discussion

Socio-economic profile of tourists

The study is based on survey of 309 tourists out of which 90 per cent were domestic tourists and the rest 10 per cent were foreign tourists. Most of the Indian tourists were from West Bengal and Assam and most of the foreign tourists were from the USA, UK, Italy and Germany. Majority of tourists (67 per cent) came to enjoy natural beauty/recreation and around 20 per cent came to know local people and their culture.Among the surveyed tourists 80.26 per cent were male and 19.74 per cent were female. A good percentage of the surveyed domestic tourists (45.32 per cent) belonged to age group of 25-45 years. On the other hand, most of the surveyed foreign tourists (51.61 per cent) belonged to the age group of 60 and above. The average age of the surveyed domestic tourists was found to be 41.17 years and that of the surveyed foreign tourists was found to be 53.43 years. Although the average age of the surveyed foreign tourists was high, yet most of them expressed their willingness to participate in adventure activities. This indicates potential market for adventure tourism activities.

Occupation is also a crucial factor in determining the demand for tourism. It was observed that most of the surveyed tourists (54.37 per cent) were salaried employees. Among the surveyed domestic tourists 55.40 per cent were salaried employees followed by self-employed (16.91 per cent). While among the surveyed foreign tourists 45.16 per cent belonged to salaried employee category followed by professional and consultant (32.26 per cent). Among the surveyed

tourists none of them was illiterate. About 55 per cent of surveyed domestic tourists were educated up to graduation level and among the foreign tourists 80.65 per cent were educated up to the level of post-graduation and above. Most of the domestic tourists (65.63 per cent) had annual household income of less than rupees 8 lakhs, while most of the foreign tourists (70.74 per cent) had annual household income more than 40 lakhs. Annual household income of domestic tourists was found to be much lower than that of their foreign counterparts.

Willingness to Pay and its Determinants

The study applied the contingent valuation method to elicit tourists' willingness to pay (WTP) for conservation of environment. The CVM is the most widely used non-market valuation technique. Out of total tourists surveyed, 71.52 per cent were willing to pay and the rest 28.48 per cent declined to reveal their willingness to pay. During the survey, the tourists who declined WTP were asked to express the reasons for non-willingness to pay. The reasons expressed by the surveyed tourists for declining WTP were; absence of proper management (41.18 per cent) followed by Government should pay (34.12 per cent). The details are given in Table 3.

Table 3 : Reasons expressed by surveyed tourists for declining WTP

Reasons	Tourist Surveyed (%)
Absence of proper management	41.18
Government should pay	34.12
Limited income	24.70

Source: Survey Data, 2009-2011

Finally, the mean WTP for environmental conservation was estimated to be Rs. 297 for and Rs. 783 per person for domestic and foreign tourists respectively. Taking into account the number of tourist inflow in the State in 2012, the total willingness to pay amount was estimated to be Rs. 687.68 lakhs. A substantial proportion of this amount can be captured by the government through the levy of conservation fee. The amount so generated can be utilized for financing environmental quality management projects. Foreign tourists were found to be more willing to pay than national tourists. An individual's maximum WTP was taken to be a function of socio-economic characteristics such as income, age, gender, education and other factors. Hence,

an attempt was made to find out the factors determining the tourist's maximum WTP. For this purpose, the tourists' maximum WTP was regressed with their socio-economic variables. Various functional forms were tried, however, the linear functional form was found to better fit than the non-linear functional form. The functional form used in the study was presented as;

$$WTP = \beta_0 + \beta_1 AHHI + \beta_2 AGE + \beta_3 GEN + \beta_4 EDU + \varepsilon_i$$

Table 4 :The result of the regression analysis for determinants of WTP

Dependent Variable : WTP

Variables	*Coefficient*	*t-value*	*p*
Constant	0.371	0.751	0.454
AHHI	0.174	2.374	0.018
AGE	0.141	2.017	0.045
GEN	-0.029	-0.416	0.678
EDU	0.12	1.723	0.086

R^2 = 0.101

The result of the regression showed that the most important determinants of tourists' maximum WTP were annual household income, age and education (Table 4). The maximum WTP was found to be positively related to the variable annual household income and it was significant at 0.05 level. This was as expected as the higher income generally induces a person to pay more for conservation. The variable age was also found to be positively affecting the maximum WTP. It was also significant at 0.05 level. This may be due to the fact that as age increases people become more concerned about environmental conservation. It was found that the middle aged and older people could spare the money to accept higher CVM bids while the younger people were less willing to pay. The variable education was also positively affecting the maximum WTP and it was significant at 0.10 level. This indicates that people with higher education are more concerned about the environment and are willing to surrender a high proportion of their income for conservation of natural environment. The maximum WTP was negatively related to the variable gender which implied that female tourists were more concern about the environment than their male counterparts. But it was not significant.

Policy Implications and Conclusion

The above findings and discussions lead to following suggestions and conclusion:

- Tourism and environment are closely related and interdependent. So, there is a need to formulate proper guidelines for tourists as well as for various stakeholders (such as tour operators, hotels and resorts, transport operators) for effective implementation of the policy to conserve natural environment.
- Tourists need to be educated about the local environment and its values. They should be guided properly not litter the destination with waste products. For this, there is a need to provide training to local unemployed youths so that they can take up the job of tourist guide.
- Public-private partnership model should be adopted for tourism development in the State. The Government should build up the facilities and lease to private parties who can manage and use them efficiently to provide better services to tourists.
- Adventure activities such as trekking, hiking, rock climbing, camping, mountaineering, paragliding, ballooning, river rafting and angling should be encouraged in different tourist spots based on suitability.
- Local people should be encouraged to undertake tourism related activities such as handloom and handicraft, poultry, fishery and other activities so that the benefits of tourism percolate down to poor local people.
- Tourism growth is likely to increase the cost of environmental management in the State. So, the government may design a levy in the form of conservation fee to raise a part or whole of the cost of environmental management from the tourists who use recreational services. This will generate revenue for the government and will also regulate the number of tourists.

Conclusion

It is found that Arunachal Pradesh has a tremendous potential for developing tourism. Tourist inflow in the State has been growing rapidly. This indicates that if proper and adequate facilities are developed, the State can be one of the most favoured tourist destinations. Natural beauty and local culture of the State are found to be the most important attractions for tourists. Tourism can be one of the major activities which can boost economic growth of the State

by generating additional income and employment for local people of the State. It can be a source of additional revenue for the State which heavily depends on inflow of funds from the Centre. But tourism development can also lead to degradation of its natural environment. So, there is a need for proper planning and management of environment. The study found that a high percentage of tourists were willing to pay for environmental conservation. The total willingness to pay amount was estimated to be substantial. A significant proportion of this amount can be raised by the government in the form of conservation fee to cover the cost of management of environment. At the same time, environmental education of tourists and other stakeholders can play a significant role in mitigating the adverse impact of tourism on natural environment of the State. Further, the sharing of economic benefits of tourism with local communities is essential to gain local support in conserving natural environment.

Notes

1. It is a form of tourism that involves 'responsible travel to natural areas which conserves the environment and improves the welfare of local people'.
2. It is a sacred place of worship of Mahayana Buddhism. It was built by Mera Lama in 1681.
3. The *Chorten* is an important pilgrimage place of Buddhist community. It is one of the largest stupa in Asia with a base of 120 feet and height of about 100 feet. It was built during early part of 18th century.
4. It is a shrine of all India importance located in lower reaches of the Lohit River. It is situated at a distance of 25 kms from Tezu, the headquarter of Lohit district.
5. It is a Hindu festival celebrated in almost all parts of India and Nepal. It marks the transition of the Sun into the Zodiac sign of *Makara rashi* (Capricorn). The day is also believed to mark the arrival of spring in India. It falls on 14th January every year, with some exceptions when it is celebrated on 13th or 15th January.

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A Study on the Reading Ability of Government Primary Schools Children of Seppa, Arunachal Pradesh

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Abstract

Reading ability of grade V children studying in ten government primary schools of Seppa town, the district headquarter of East Kameng district of Arunachal Pradesh was tested using a Reading Test developed by Gupta (2008). The test was performed on 180 children, 66 boys and 114 girlsof 10-12 years age group. It was found that the grade V children of these schools failed to read words as well as comprehend the story meant for grade III and IV. Both boys and girls were found to be equally weak in their reading abilities. On the basis of the present study, it is suggested that the government primary schools should develop better strategic reading activities so that their children could improve the reading ability as this is a basic education skill and need to be developed at an early stage.

Key words : Reading ability, Grade V children, Government primary school, Seppa, Arunachal Pradesh

Introduction

Children's reading ability either in primary level or at elementary level has been the concern of parents and teacher for several years. Growing body of literature reveals that children deficiencies in reading ability definitely produce poor reading achievement or educational attainment. For example Boland (1993) carried out a longitudinal reading research on the affects of primary school education on secondary school career. The study proved that reading

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and spelling ability developed in primary school level, directly or indirectly affects secondary school career. Similarly, Paisey (1990) stated that experiences and treatment children received at primary school stage ultimately affect their future attitude and achievement. Likewise Ohles (1970) in his book aptly stated that if children have reading problem in early stage will have problems at upper stage too, thus degree to which children acquire basic educational skills at early stage immensely affect later stage of education. It signifies how early literacy is vital source for better reading.

In one particular study, Beverly (1996) reveals that students who attended preschool year had a high reading achievement than those who do not attended. Similarly, Jesson andLimbrick (2014) revealed that early literacy intervention contributes to reading achievement. By adopting reading recovery method on 505 children, the analysis of the study results indicate moderate to strong correlation between reading and writing achievement which indicate impact of reading recovery in writing as well as reading. From this it is concluded that early literacy is necessary to achieve reading literacy.

Looking into the contribution of other elements that facilitate students leaning at schools and home, Miller et al. (1993) reveal that positive reinforcement and reward improve self correction of home work as well as accuracy and contributes homework achievement in children. There is also believed among teachers and parents that time spent reading is important for children's growth in reading. A few studies have made report on relationship between time spent reading and reading achievement. Taylor et al. (1990) examine the probable effect of time spent on reading relatively related to gain in children reading achievement. Their research finding reveals that time spent reading at school positively contributes to reading achievement but time spent reading at home was not beneficial. Considering the above findings, efforts have been made in the present study to understand the basic reading ability in terms of words reading and comprehension ability of government primary school children of Seppa circle (headquarter of East Kameng district).

Objectives of the Study

The aim of the present study was to determine the reading ability of grade Vchildren of government primary schools in Seppa town.

Methodology

A descriptive educational research method was adopted in the study taking

into account qualitative and quantitative approach of research methodology. The study was conducted on grade V primary schools children from ten randomly selected government schools (table 1) from Seppa town. Being a town, the place is also convenient for the study of children from nearby areas due to ease in travelling at minimum expenses. The medium of instruction in these schools is English. The test instrument was administered to children during their class hour by the investigator in the presence of class teacher. The class teacher participation was deemed necessary to maintain classroom discipline.

A standard test instrument administered in this study was Reading Test (RRT) developed by Gupta (2008). The current reading test was meant for children of grade III and IV. The test consisted of two parts, i.e., Word Reading Test (WRT) consisting of 50 words, and a Reading Comprehension Test (RCT) of 10 questions. Each correct answer was awarded one point.

Following Null Hypotheses were tested :

H_1 : There is no significant difference in Word reading ability of boys and girls at grade V level of government primary schools.

H_2 : There is no significant difference in comprehension ability of boys and girls at grade V level of government primary schools.

H_3 : There is no significant difference in reading ability of boys and girls of government primary schools.

Table 1 : The government schools and number of grade V children included in the study

Name and Place of the government schools	No. of Children	
	Boys	Girls
1. Govt. Middle School Type- II, Seppa	13	34
2. Govt. Middle School Pacha	22	38
3. Govt. Middle School Mebua	4	3
4. Govt. Middle School Pagia Valley	0	6
5. Govt. NWM School Seppa	0	4
6. Govt. Primary School Bosso	10	16
7. Govt. Middle School Pabua	3	0
8. Govt. Primary School Kakuka, Seppa	2	3
9. Govt. Primary School Forest Coloney, Seppa	9	8
10. Govt. Primary School Santipur	3	2
Total	66	114

Data Collection and Analysis

Altogether 180 grade V children (66 boys and 114 girls) of 10-12 years age participated in this study and none of the children were having any physical disability. On the basis of test administered, quantitative data was recorded. Descriptive statistics and t-test ($p<0.05$) was performed using SPSS 16.0 version for windows.The obtained average mean of Words reading test and Comprehension test was 24.50 and 10.72 respectively. Children obtaining less than the average mean score were regarded as poor in their Reading ability.

Results and Discussion

There was a significant difference in their reading abilities ability of boys and girls.Again, the calculated t- value 2.76 (see table 2) was higher than critical ratioof 't' (2.01) with degree of freedom (df) = 48 at 0.05 level of significance. Therefore, the null hypothesis that there is no significant difference in Word reading ability of boys and girls of grade V level isrejected. Hence, it is concluded that the boys and girls differ significantly in their Word reading ability.

The computed p-value denoted by significance of two tailed test in SPSS output shows there is no significant difference in Comprehension ability of boys and girls.The calculated t-value 0.34 is less than critical ration of 't' (2.01) with degree of freedom (df) = 48 at 0.05 level. Therefore, the null hypothesis that there is no significant difference in the Comprehension ability of grade V boys & girls is accepted. Hence, it is concluded that the boys and girls do not differ significantly in their Comprehension ability.

Table 2 : Reading abilities of Boys and Girls of Grade V of 10 Government schools of Seppa, Arunachal Pradesh.

Test Administered	Boys (N=66) Mean±SEM	Girls (N=114) Mean±SEM	Average Score of Students	Standard Error of Differences (SED)	t (at 5%)
Word reading ability	29.01±2.15	21.89±1.43	24.50	2.58	2.76*
Comprehension ability	11.21±1.28	10.44±0.80	10.72	1.59	0.34
Reading ability	20.11	16.17		1.72	0.82

*Significance at $p< 0.05$ level.

Again, the calculated mean of boys in Word reading (29.01) and comprehension (11.21) was quite higher than the obtained average mean in Word reading (24.50) and Comprehension (10.71). In spite of that the total mean of both boys (20.11) and girls (16.17) are less than obtained average mean which indicate that boys and girls are poor in Reading ability. However, the t- value (0.82) for Reading ability mean score also indicates that there is no significant difference between mean scores of boys and girls students in their Reading ability. Thus, the null hypothesis that "there is no gender difference in Reading ability at grade V primary school students" gets accepted at given 0.05 as well as at 0.01 levels of significance.

The study found that boys and girls of Grade V standard of the Government Primary School Seppa differ significantly in their Word Reading ability, thus clearly indicating that boys were relatively better than girls in Word Reading test. The difference of their mean was almost 7.0% (29.02% vs 21.89%).The present finding is similar to the results obtained by Thompson (1987) and Gates (1961) in their studies that there is a significant difference in Word Reading ability of boys and girls.

Further, both boys and girls were found to have very low Comprehension ability (t=0.34) and their score was almost similar (11.21% and 10.44% respectively).So, it is note worthy here that the Comprehension abilities of boys and girls were similar despite of the fact that the boys were better in their Word reading ability than the girls. However, the overall Reading test (t = 1.93) score that both boys and girls are alike in their Overall Reading abilities.

Conclusion

The results of this study relatively give us a kind of generalization that the grade V students of different government primary schools failed to read words and comprehend story that are prescribed for students of III and IV grades and thus have poor Reading ability.The result of the study high lights the need to develop better strategic reading activities to be incorporated in the teaching-learning process in government primary schools so that children could improve their Reading ability.

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Multiple Poverty and Levels of Deprivation in Assam - A Case Study in Sonitpur District

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Abstract

Poverty is defined as the state where a section of society is deprived of minimum basic requirements of living. Poverty is a predominant rural phenomenon, as majority of poor inhabits in rural areas. Rural people constantly face locational disadvantage, being in rural area where the access to basic amenities is inadequate. As a matter of fact, in the Gandhian perspective it is said that, the real India lives in villages. But policy makers have been constantly undermining the above fact and neglected rural areas in their development effort. . In this context the present paper attempts to examine the levels of deprivation of rural people in terms of their access to basic amenities like housing, drinking water, sanitation etc. The study is based on both primary and secondary data base. The causal relationship between rural poverty and some selected socio-economic indicators have been taken into account. It is seen that there exists a positive relationship between incidence of rural poverty and levels of socio-economic deprivations among all the revenue circles/ developmental blocks of the study area. Need for reduction of socio-economic inequality in terms of poverty between rural and urban areas for regional development has been stressed.

Key Words : Rural Poverty, Deprivation, Basic Amenities and assets.

Introduction

Poverty is the root cause of socio-economic inequality that hinders regional development. Rural poverty is quite a common phenomenon as most of the

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populations in rural areas are dependent on agriculture as their prime source of income earning. Agriculture, on the other hand, is mainly dependent on the blessings of climate and manual labour as it still lacks application of scientific technology and thereby gives low returns which are responsible for downtrodden condition among rural flocks in India. Poverty is an extremely complex phenomenon, which manifests itself in a range of overlapping and interwoven economic, political and social deprivations. These include lack of assets, low income levels, hunger, poor health, insecurity, physical and psychological hardship, social exclusion, degradation and discrimination, and political powerlessness and disarticulation. Since a large proportion of India's poor live in rural areas with poor natural resource endowment or access, thereof is among the most important driving force that sustain and drive initial poverty into long duration and multidimensional (Shah, 2007). Therefore the most burning problem before country today is to eradicate rural poverty, which continues to assume new dimensions. Poverty is a state of deprivation and can be defined as a social phenomenon where a section could not meet even minimum requirements of living (Singhal and Gill, 1991). Berthod et al. (2004) have viewed that people who have a low income may not have the status equivalent to the status of the section of population that is most materially deprived. It means, there is a need to incorporate indicators relating to dimensions other than income (Nolan and Whelan, 2007). Therefore, the set of indicators include not only measures of income inequality but also other factors like housing conditions, sanitation facilities, basic amenities and assets (Atkinson et.al. 2002).

As per 2011-12 data, 33.89% of people in rural areas (92.06 lakh) of Assam are below poverty line (BPL), while in the urban areas of Assam 20.49% of the total population (or 9.21lakh) people fall in the BPL segment. Assam's position in BPL segment is third highest among the seven North Eastern states. The elimination of poverty is not merely a question of economic upliftment but is a social and a political issue related to the level of the politico-social awareness of people (Qureshi, 2004). Hence, in this present paper an attempt has been made to analyze the regional variations in the level of poverty and deprivation in the selected revenue circles of the Sonitpur district.

Objectives of the Study

1. To analyze the spatial variations of rural poverty and socio-economic deprivation in all the selected revenue circles.
2. To examine the causal relationship between income (dependent variable)

and selected socio-economic variables related to deprivation (independent variables) in the study area.

Database and Methodology

The study is based on both primary and secondary data sources. The primary data was collected through field survey carried out in 2014 in Sonitpur district of Assam.The villages were selected on the basis of stratified random sampling technique. From each of the seven revenue circles, four villages were selected. In all total 28 villages are selected and the sample size is 20% depending on the size of the population, religion and community. All together 250 rural households were selected due to constraint of time and cost. The secondary data was collected from the district Statistical handbook, data published by Director of Census operation, District rural development authority, State Institute of Rural Development and office of Gaon Panchayat. In the present analysis, a set of ten indicators of socio-economic development was taken into account to determine the levels of deprivation at one hand and per-capita income and employment rate on the other hand. These indicators fall into the categories like household infrastructure, population characteristics, literacy, employment and income.

In the first step, the raw data for each variable which determines the areal variations of household amenities with regard to employment and income were computed into standard score (Z value or Z - score). The score quantifies thedeparture of individual observations, expressed in a comparable form.

$$Z_{ij} = \frac{X_{ij} - \bar{X}_i}{\sigma_i}$$

Where, *Zij*= Standardized value of the variable *i* in revenue circle *j*.

Xij= Actual value of variable *i* in revenue circle *j*.

Xi = Mean value of variable *i* in all revenue circle

ói= Standard deviation of variable *i* in all revenue circles

In the second step, the z-scores of all variables were added revenue circle wise and the average was taken out for these variables as composite score (CS) for each revenue circle and algebraically expressed as :

$$cs = \frac{\sum Z_{ij}}{N}$$

Where, *CS* is composite score, *N* refers to the number of indicators (variables), Z indicates z scores of all variables *i* in revenue circle *j*. The positive values relating to the Z-score of revenue circle explains high level of development in respect of housing and modern household amenities and negative values shows the low level of development in these aspects.

The correlation co-efficient (r) was computed on the basis of Karl Pearson's correlation co-efficient method which is as follows :

$$r = \frac{\sum x^2 - \sum x \sum y/n}{\sqrt{\sum x^2 \frac{(\sum y)^2}{n}} \sqrt{\sum y^2 \frac{(\sum y)^2}{n}}}$$

Where: r is the co-efficient of correlation,
x, y are the two given variables,
n is the number of observation.

To find out the computed 't' value, student t-test technique was used as given below :

$$t + r \sqrt{\frac{(n-2)}{1-r^2}}$$

Where: t is the calculated value of 't' in the test of significance,
r is the computed value of co-efficient of correlation,
n is the number of observation.

Advanced statistical techniques was used to compute the statistical data using the SPSS Software (Version 16.0) and GIS-Arc view program (Version 3.2)was applied to show the spatial patterns of availability of total and rural housing and modern household amenities among the revenue circles of the Sonitpur district through map.

Study Area

The Sonitpur district is located on the North bank of Brahmaputra river (longitudes 92° 16'E, -93° 43'E, and latitudes 26° 30'N, 27° 01'N). It lies between the mighty Brahmaputra and Himalayan foothills of Arunachal Pradesh. The district is largely plains with some hills. The Brahmaputra River forms the South boundary of the district. A number of rivers which originating in the Himalayan foothills flow southward and ultimately fall in Brahmaputra river. There are number of river island in Brahmaputra river locally known as Chars or Chaporis. They are generally sandy. Some chars are large enough and fit for habitation and cultivation. The district is bounded

by Arunachal Pradesh in the North, river Brahmaputra in the South, Lakhimpur district in the East and Darrang district in the West. The total Geographical area of the Sonitpur district is 5324sq.km. The district headquarters is Tezpur and there are three sub-divisions-Tezpur, Biswanath Chariali and Gohpur. The district comprises of 7 Tehsils/circles and 26 Mouzas. There are 1615 villages (including 19 under BTAD), and 5 towns (Tezpur, Dhekiajuli, Rangapara, Biswanath Chariali and Gohpur).There are two Municipality board and three Town Committees.

As per census report, the population of Sonitpur is 19.26 lakh (year 2011),16.78 lakh (year 2001) indicating a growth rate of 15.67% over the decade. The population density is 365 inhabitants per sq. km (2011). The sex-ratio as per census report is estimated as 946 females for every 1000 males while the literacy rate of the district is 69.96%.

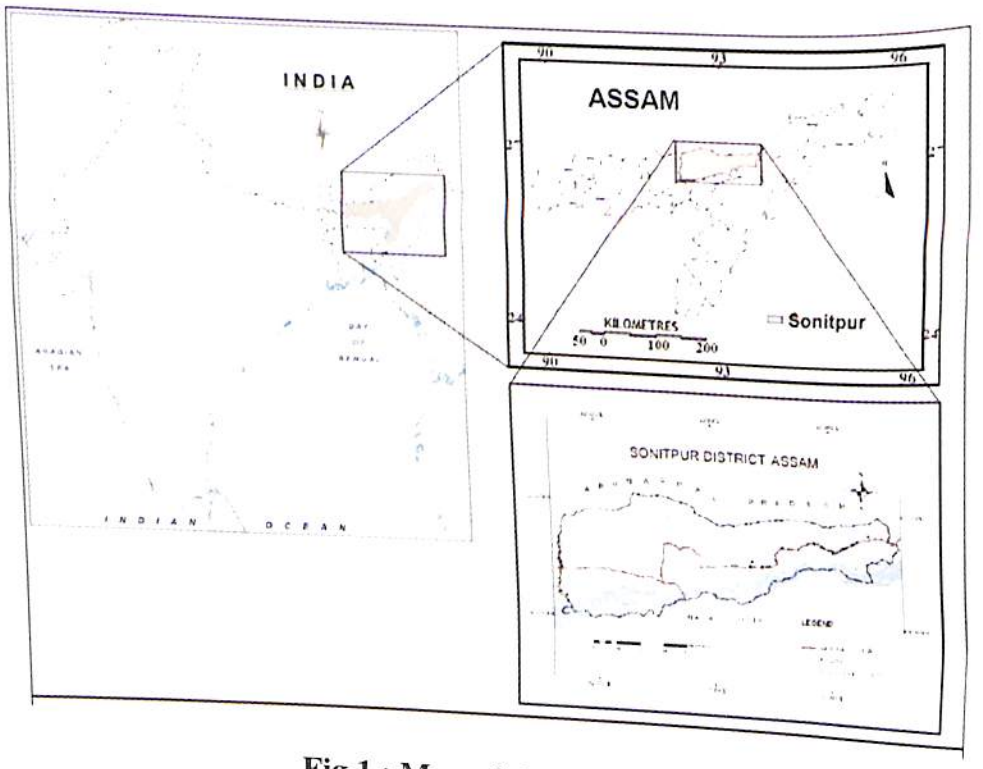

Fig 1 : Map of the study Area

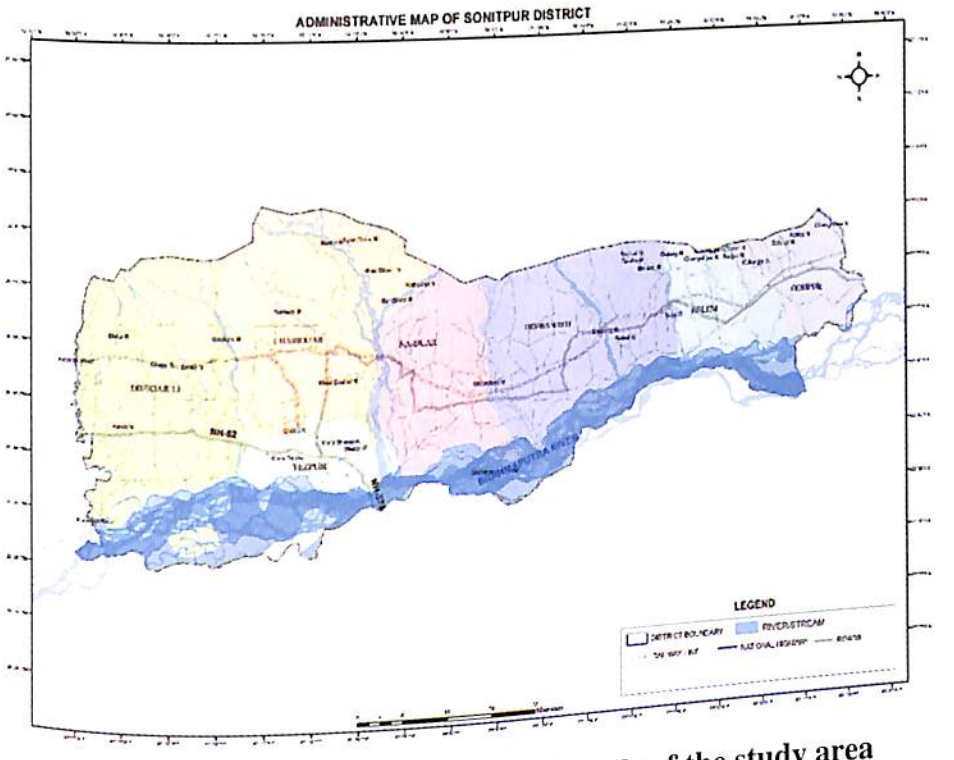

Fig 2 : Map of the revenue circles/tehsils of the study area

Table 1: Regional distribution of poverty in Assam

	Percent of population below poverty line					
	Rural		Urban		Combined	
Regions	2009-10	2011-12	2009-10	2011-12	2009-10	2011-12
Plains- Eastern	32.09	26.25	7.14	6.23	31.70	28.15
Plains- Western	37.02	29.28	16.71	11.20	35.53	33.55
Plains-Central	27.10	22.92	6.42	5.43	22.63	21.09
Hills	45.05	26.68	11.04	4.73	41.72	25.96
All-Assam	39.90	33.89	26.10	20.49	37.95	37.90
All-India	33.8	25.7	20.9	13.7	29.8	21.9

Source : Data published by the Directorate of Economics and Statistics, Assam

Table 2: Percentage of Households and Population Deprived of Different Basic Amenities in Sonitpur district, Assam: (Census 2011)

Indicators		Rural and Urban		Rural		Urban	
		% HH	% POP	% HH	% POP	% HH	% POP
1	2	3	4	5	6	7	8
1.	No Assets	34.48	34.75	40.49	40.72	19.02	18.91
2.	No Banking Services	64.46	64.96	69.89	70.28	50.48	50.20
3.	No Electricity	44.15	44.49	56.48	56.79	12.41	12.34
4.	No Toilet	63.59	64.09	76.08	78.52	24.28	26.14
5.	No Bathroom	63.86	64.36	72.17	77.60	22.60	29.43
6.	No Tap Water	63.30	74.96	75.71	76.14	31.34	31.17
7.	One or none DW	41.59	63.79	43.20	43.44	37.44	37.23
8.	Dilapidated house	05.50	05.54	06.23	06.27	03.60	03.58

Note: DW- *Dwelling Rooms excluding Kitchen*; HH- *Household*

Source: Census 2011, Data on household amenities

Table 3 depicts the trends of housing and household amenities in both urban and rural areas of Sonitpur district. There is significant difference between the proportion of non -electrified houses in rural and urban areas. More than half of the rural India does not have electricity in comparison to a tenth of the urban households. Electricity not only serves the basic purpose of lighting but also is very important in the development of agriculture and industry. The poor asset holding position among the rural households reflects the extent of poverty among rural households. Lack of electricity and infrastructure widens information gap, which is detrimental to progress. Sanitary conditions are prerequisite for a healthy life and in this respect the rural households are at a greater disadvantage. Around three fourths of the rural households do not possess bathroom or toilet. Another factor, which can affect health, is the type of cooking fuel being used by the households. 90 % of rural household use traditional cooking fuel such as firewood, charcoal etc that are more polluting and harmful. Safe drinking water is another important determinant of health and access to it is very important to avoid water borne diseases. Here also data suggests that the rural households are more vulnerable to water related health problems in comparison to the urban dwellers. The rural and the urban population do show similar proportion of deprivation on the lines of number of dwelling rooms possessed. The reasons for this in urban area could be the space constraint. The proportion of dilapidated houses in rural areas is double in comparison to the urban areas; but in absolute terms, the number is larger in rural areas and the level of deprivation is worse. Therefore, it is the need of the

hour to assess the availability and accessibility of housing and household amenities in the state, more particularly for rural areas which are far more deprived compared to urban areas.

Spatial Analysis

Household assets and amenities reflect a household's quality of life. Electric lights enable more reading and education; new fuels and improved stoves provide a cleanerenvironment and better health; clean water and sanitation reduce the prevalence of gastrointestinal diseases; motor vehicles and mass media strengthen the household's connection to the country as a whole; access to piped water and use of kerosene or liquefied petroleum gas (LPG) for cooking reduces the time women spend in water and fuel collection, thereby reducing domestic drudgery and increasing time devoted to other activities. While these amenities improve the quality of life, they also demonstrate to family and neighbors that the household has succeeded financially. In modern life, household possessions are both the signs of social status and instruments for a better life.Assets and amenities cost money, so their acquisition is determined primarily by household income. Household possessions reflect accumulation over many years, so they may be a better indicator of a household's long term economic standing than annual measures, such as income.

Table 3: Revenue circle wise Availability of Housing and Household Amenities in rural areas of Sonitpur district

Revenue circles/ Tehsils	Composite Score of Total Housing and Household Amenities	Composite Score of Rural Housing and Household Amenities
Tezpur	0.89	0.92
Dhekiajuli	0.59	0.87
Chariduar	-0.26	-0.15
Biswanath	0.76	0.77
Helem	-1.01	-1.03
Gohpur	0.27	0.09
Naduar	-0.57	-0.40

** *Based on sample Survey*

Table 3 depicts the composite mean z-score of availability of housing and modern household amenities among rural areas of the revenue circles in Sonitpur District.

Table 4 : Rural Housing and Household Amenities in Sonitpur district

Category	Composite score	No. of Revenue circles	Name of the Revenue circles
High	Above 0.30	3	Tezpur, Dhekiajuli, Biswanath
Medium	0.30 to - 0.30	2	Chariduar, Gohpur
Low	Below - 0.30	2	Naduar, Helem
	Total	7	

Based on Table 2

The analysis of Table 4 reveals that there is a wide range of spatial variations in level of development in respect of housing and modern household amenities in the rural areas of Sonitpur District. The entire range of variations may be arranged into three categoriesi.e., high (above 0.30 score), medium (0.30 to -0.30 scores), and low (below -0.30 score).

An analysis of Table 3 exhibits that the three revenue circles i.e. Tezpur, Dhekiajuli and Biswanath have remarkably high level (above 0.30 score) of housing and modern household amenities in the district as they are influenced by ongoing rapid urbanization process.While two circles, i.e. Chariduar and Gohpur fall under the medium level (0.30 to- 0.30 score) of housing and household amenities in the study area.At the same time the table also depicts the lowest level of development at two circles i.e. Naduar and Helemwith composite score ranging below -0.30 respectively.

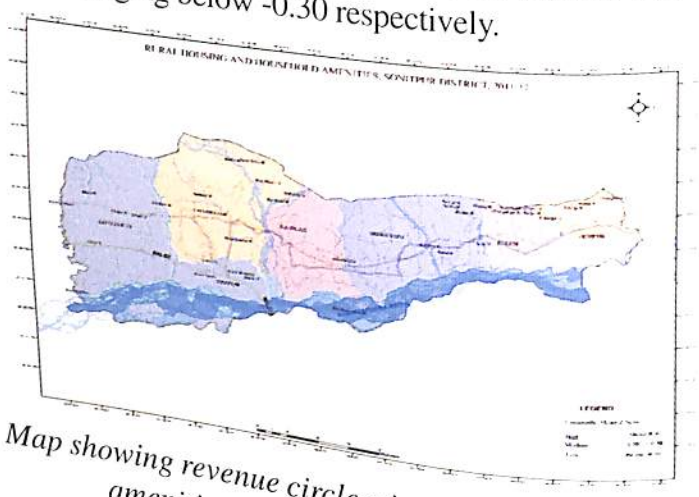

Fig. 3 : *Map showing revenue circle wise rural housing and household amenities in SonitpurDistrict , Assam*

Table 5 : Correlation between rural poverty and household income:

Variables	Definition of variables	Employment (Y1)	Per-capita Income (Y2)
X1	Household size	0.074	0.173
X2	Per capita income	-0.039	1
X3	Total literacy rate	0.50**	-0.047
X4	Male literacy rate	0.43**	-0.097
X5	Male employment rate	0.76*	-0.30
X6	Female literacy rate	-0.52	0.202
X7	Female employment rate	0.83*	0.066
X8	Percentage of household having own houses	-0.32	0.44**
X9	Percentage of households having toilet within their premises	0.45	0.072**
X10	Percentage of households having drinking water within premises	-0.04	-0.381

Source: Based on Sample survey

** Significant at 1% level, ** Significant at 5% level*

The above Table 5 shows the analysis of simple correlation of employment rate and per capita income (dependent variables) with selected indicators of socio-economic development (independent variables).The correlation between employment rate and indicators of socio-economic development shows that out of ten independent indicators, the coefficient of correlation of four indicators (X3, X4, X5, X7) has a higher level of significance. Among the four indicators, two indicators (X5= Male employment rate and X7= Female employment rate) are significant at 99 percent confidence level which thereby indicates a positive correlation with employment rate. While, X3 and X4 which shows the total literacy rate and male literacy rate are also positively correlated with employment rate and significant at 95 percent confidence level. The result of correlation between per capita income and selected indicators of socio-economic development exhibits that out of ten indicators, the coefficient of correlation of two indicators i.e. (X8=Percentage of households having own houses, X9= Percentage of households having toilet within premises) are positively correlated with per capita income at 95 percent confidence level. Other indicators of socio-economic development are also correlated with the employment rate and per-capita income. Thus the above analysis clearly shows

how employment rate as well as per capita income of the households determines the level of deprivation and poverty.

Conclusions

The over-all analysis of the study reveals that there exist regional variations in the level of rural poverty over seven revenue circles of the district. In fact, inequalities are wide spread across geographical locations which is the crucial factor leading to constant poverty in rural areas. Particularly the standards of living of people living in rural and urban location widely differ. Rural people constantly face locational disadvantage of their being in the countryside where the access to basic amenities is difficult. It is thus quite evident from field study that the villages which are nearby to urban centers are more developed compared to those villages which are located in the interior. The argument that urban biasness in policy making and in the allocation of resources is the reason behind the existing condition of the rural people is true till the date.

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Agriculture Diversification towards High-Value Commodities (HVCs) in Arunachal Pradesh : A Case Study of West Kameng District

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Abstract

Agriculture Diversification in Arunachal Pradesh is gaining momentum in favour of high value commodities, namely, fruits, vegetables, livestock and fisheries. Agricultural diversification is strongly influenced by infrastructure development (especially markets and roads), urbanization, price policy and technological improvements. The areas which have better infrastructure facilities have benefited more as a result of agricultural diversification in favour of high value crops by substituting inferior coarse cereals. Using farm level survey data, the paper examines the Patterns and determinants of diversification. The results of the analysis of cross section of 110 randomly selected farms suggest that, large size farms are more diversified, and when there is productive location the farmers have a greater incentive to spread risk. It also shows that there exist positive correlation between diversification and operational landholding. The results reported in the study are quite interesting and useful, and offer important policy suggestions.

Key Words : Diversification, High Value Commodities, Cash crops.

Introduction

Diversification refers to an increase in the number of varieties of crops produced in a farm during a specific period of time. It takes place due to a number of reasons such as sustained economic growth, rising per capita income, urbanization, etc. Changes in patterns of consumption in favour of

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high value crops such as fruits, vegetables, poultry, etc. have been the main reason that induces the farmers to produce high value crops. Agricultural diversification can be described in terms of the shift from the regional dominance of one crop towards the production of a large number of crops to meet the increasing demand of those crops (Haque, Bhattacharya and Kalra, 2010). Diversification is increasingly being used to describe growth in area under high value crops.

The process of diversification can be classified into horizontal and vertical. Horizontal diversification is a form where the farmers diversify their agricultural activities in order to either stabilize or increase their income or both. It can either take the form of shift from subsistence farming to commercial farming or the shift from low value food crops to high value crops. Vertical diversification refers to the farmers' access to non-farm income, i.e., the income from non-agricultural sources. Agriculture in the study area is diversifying in recent decades towards high-value commodities, specially, fruits and vegetables, mainly due to available demand and better access to roads which induces farmers to use more fertilizer, and prompts the hiring of more labourers facilitating agriculture specialization, thereby enhancing agricultural income which further induces farmers to produce one or two crops. The pace has been accelerated in the recent years. HVCs account for a large share in the total value of agricultural production. The study focuses on trend and patterns of diversification towards high value crops and also assesses the potential of high value crops in the context of various determinants.

Objectives

The major objectives of the study are as follows :

- To examine the pattern and trend in agricultural diversification.
- To identify the key drivers of crop diversification.
- To identify the constraints preventing farmers from diversification into higher-value commodities and become more commercially oriented.

Database and Methodology

This study has used both secondary and primary data, which were collected and analysed for arriving at results and conclusions. Primary data was collected during the field survey which was carried out in the villages of West

Kameng district by using questionnaire–cum-interview method and also participant observation. In case of secondary sources both published and unpublished reports were collected from official records.

The primary data is based on a survey of a cross-section of cultivating households in the district. Three circles from the district have been selected on the basis of area under higher value crop (fruits and vegetables) and distance from the district headquarters. Then a village or a cluster of villages were chosen from each of the circle. Before the selection of sample farm households, all households were enlisted along with information including operational holdings i.e., net cultivated area in the selected villages. Based on the net cultivated area, farm households were categorized into four broad sub-classes viz., marginal (less than 1 hectare), small (between 1-2 hectares), medium (2-4 hectares) and large (above 4 hectares). Within subclasses, the households were selected based on random sampling procedure and the information on various aspects of the households have been collected through a structured questionnaire. In total 110 households were surveyed. However, to enhance the reliability of information, the method of participatory method has also been followed.

Pattern of farm diversification

In the study area agricultural diversification is slowly picking up momentum in favour of high-value food commodities especially vegetables and fruits. The changes within the crop mix are primarily due to income or cash requirement of the farmers and also risk management. In fact in recent years high value crops especially fruits and vegetables have appeared as income-generating source in agriculture.

It is observed that a steady diversification of agriculture is taking place in the study area with replacement of food-grain crops by high value crops such as fruits and vegetables. Farmers have substituted high value crops in place of coarse cereals in their pursuit for higher income. The government-supported programmes have promoted the cultivation of fruits and vegetables. The climatic condition is also suitable for producing crops like tomato, peas, beans, cabbage, during the summer season (April to October). The price advantage makes it profitable to incur high production cost and transport off-season vegetables to distant consumer markets. There are many small pockets which have attained economic progress by diversification through off season vegetable cultivation

Cropping Pattern and Diversification

In the study district, there is a significant change in cropping patterns. The percentage of area under foodgrains has declined drastically over time. Out of nine major crops produced, the shares of foodgrains have come down from nearly 85 per cent in the early 2006-08 to about 74 per cent during 2012-13. The cereals accounted for around 80 per cent of total area in 2006-07, but their share has come down significantly by more than 11 percentage points during 2010-13, (shown in Table 3.1) Among the cereals, maize has lost its share in area by 5 percentage points, which is highest among the cereal crops, while paddy and millet have also lost their share in area significantly; pulses on the other hand have increased their share in total area.

Among other major gainers are fruits and vegetables, where the share of area under it in the last seven years has increased significantly.

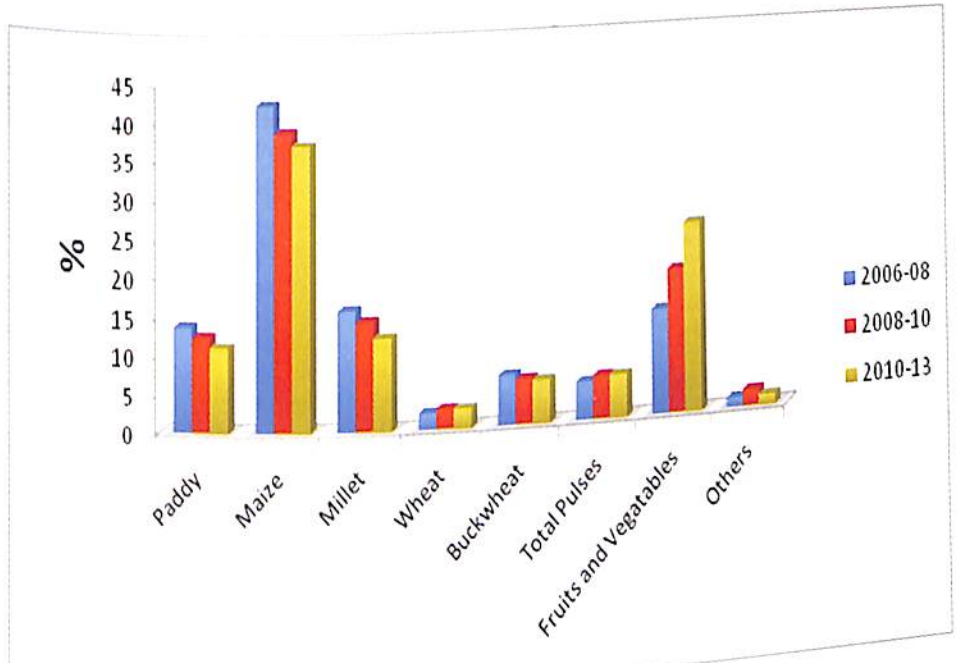
Table 1: Changing Cropping Pattern in the Study area : 2006-07 to 2010-13

(Percentage of area under different crops)

Crops	2006-08	2008-10	2010-13	Change During 2006-2013
(1)	(2)	(3)	(4)	(5)
Paddy	13.67	12.35	11.12	-2.55
Maize	42.23	38.56	36.95	-5.28
Millet	15.63	14.14	12.1	-3.53
Wheat	2.19	2.63	2.6	0.41
Buckwheat	6.52	5.9	5.66	-0.86
Total Cereals	**80.24**	**73.58**	**68.43**	**-11.81**
Rajma	1.04	1.8	1.82	0.78
Local Pulses	2.08	2.07	2.03	-0.05
Soybeans	1.87	1.76	1.77	-0.1
Total Pulses	**4.99**	**5.63**	**5.62**	**0.63**
Total Food grains	**85.23**	**79.21**	**74.05**	**-11.18**
Fruits and Vegetables	13.55	18.66	24.62	11.07
Others	1.22	2.13	1.34	0.12
Total	**100**	**100**	**100**	**0**

Source: Computed from data derived from the Statistical Abstract of Arunachal Pradesh, Various Years

Figure 1: Cropping Pattern in the Study area (2006-07 to 2010-13)



Diversification towards High Value Fruits and Vegetable

Table 3.2 shows the percentage share in gross value of agriculture output in the district. The share of the cereals in the total value of agriculture output in the district has declined from 45.59 per cent in 2006-07 to 32.09 per cent in 2012-13. The decline in the share-of cereals is mainly due to the fall in the share of paddy and maize. The share of fruits and vegetables in the gross value of agricultural output has increased significantly in the last seven years. For instance, share of fruits in the gross value of agriculture output increased more than six times from 3.68 per cent in 2006-07 to 19.88 per cent in 2012-13. Such a huge increase was mainly due to a significant increase in the production of kiwi and apple in recent years. The total production of apple in the district increased from 194 metric tons in 2006-07 to 4700 tonnes in 2012-13, while in case of kiwi its production increased from just 22 tonnes in 2006-07 to 3500 in 2012-13. As a result of that the share of kiwi and apple in the gross value of agriculture has increased significantly from 0.23 and 1.67 per cent in 2006-07 to 8.2 and 8.63 per cent respectively in 2012-13

The share of vegetables has also increased from 19.78 per cent to 23.27 per cent entailing a change of 3.49 percentage points during the same period, mainly due to the increase in the production of tomato and cabbage. The

production of tomato and cabbage increased from 2025 tonnes and 2410 metric tons in 2006-07 to 7000 and 2572 tonnes respectively in 2012-13. While the share of both the crops in the gross value increased from 2.6 and 6.99 per cent in 2006-07 to 4.23 and 6.63 per cent in 2012-13 respectively.

Table 2: Share of gross value of agriculture output (in %)

Commodities	Years		
Crops	2006-07	2009-10	2012-13
(1)	(2)	(3)	(4)
Cereals	45.59	46.00	32.90
Paddy	6.01	5.95	5.77
Maize	18.97	20.08	17.25
Buck wheat	1.65	1.62	2.02
Vegetables	19.78	20.66	23.27
Potato	5.23	--	7.86
Cabbage	2.6	–	4.23
Tomato	6.99	–	9.63
Fruits	3.68	5.26	19.88
Apple	1.67	2.56	8.20
Walnut	0.91	0.40	1.14
Kiwi	0.23	1.41	8.62
Orange	0.53	0.71	1.40
Others	30.95	28.09	23.95

Source: Computed on the figures from the Directorate of Agriculture, Itanagar, and Government of Arunachal Pradesh.

Note: ---- means non-availability of data

Cultivation of Cash Crops

Cash crops have a high economic viability. In the study area, the area under cash crops is considerably large compared to that of non-cash crops. For instance, in 2011-12 around 20 per cent of the total area was under cash crops, and in 2012-13 it increased to 24 per cent. It is observed from table 3.2 that potato has the highest area under cultivation in the region followed

by tomato, cabbage and then by chili. The area under these crops varies from one region to another, depending upon the availability of cropped land and agro-ecological conditions. There are more than fifteen cash crops grown in the district. These crops are potato, tomato, cabbage, chili, ginger, garlic, apple, potato, etc. Table 3.3 shows the area under cash crops.

Table 3: Area under Cash Crops (percentage of total production)

Cash Crops							
Vegetables	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Potato	30.46	24.01	27.67	43.41	41.73	32.18	23.29
Tomato	30.52	32.9	31.16	30.73	25.9	47.44	50.02
Cabbage	36.33	37.47	38.43	22.23	22.1	17.12	20.25
Ginger	0.35	1.09	1.09	1.07	2.07	1.68	1.32
Chilli	0.20	0.20	0.10	0.30	0.10	0.20	0.10
Others	2.14	4.33	1.55	2.62	8.1	1.38	5.52
Total	100	100	100	100	100	100	100
Fruits							
Apple	33.85	32.62	24.7	25.02	51.15	51.65	48.75
Kiwi	3.83	3.81	3.16	9.28	21.99	31.93	31.66
Orange	26.7	23.62	20.06	16.54	9.71	6.57	6.33
Walnut	6.1	5.48	9.08	12.42	3.58	3.75	3.83
Plum	3.46	4.57	5.69	3.22	0.51	0.51	1.83
Others	26.06	29.9	39.31	33.52	13.06	5.59	7.69
Total	100	100	100	100	100	100	100

Source: Computed from the figures from Directorate of Agriculture, Government of Arunachal Pradesh

The overall Incidence of Diversification

Out of the total 110 households surveyed 59 holdings i.e around 53 per cent of the total households on an average were found to be engaged in some form of diversified production. In other words, that five in every ten households are engaged in some gainful activity. Table 3.4 shows that involvement in diversification increases with the increase in size of operational landholdings, that is, there is a positive correlation between incidence of diversification and landholding. This is an indication that households with larger

landholdings are more likely to go for different options. Thus, diversification is more common in large farms because it appears that larger farms are more likely to have the resources, the flexibility and an efficient management, to pursue opportunities for diversification.

Table 4: Farm Diversification by Size of Operational Holdings

Size of Operational Holding	Percentage Diversified	Average Divergence from all Holdings
(1)	(2)	(3)
All holding	53.04	
Marginal	15.28	– 37.76
Small	30.08	– 22.96
Semi-medium	42.71	–10.33
Medium	79.75	26.71
Large	82.12	29.08

Source: Field survey, 2013

Factors Contributing to Diversification

The district has seasonal advantage over state like Assam and as such summer vegetables can easily be absorbed in the neighbouring districts and also in other states

- The district's various altitudinal zones make it possible for it to produce a wide range of produce.
- The huge market in the neighbouring districts and other neighbouring states.
- Prevailing market structure induces farmers to go for commercial production specially fruits and vegetables, though much needs to be done for effective and efficient marketing of the agricultural production. Due to the vast distance between the farm and the main market for output, farmers are not able to sell directly to the consumers. For instance, the distance from the district headquarter to Itanagar (Capital of Arunachal Pradesh) and Harmoti (a prominent marketing place in lower Assam) is 360 km (approx.) and 340 km (approx.) respectively, hence this gap is filled up by the middlemen. The middlemen travel from house to house to collect the surplus produce and sell it to the big mandies/whole sellers and also to retailers. The farmers also sell a portion of their surplus in the nearby local market, but the local demand is highly inadequate.

Factors Limiting Diversification of Agriculture

Infrastructure

The lack of infrastructures limits the farmers from producing more than that is actually required for their own consumption. Essential farm infrastructure like adequate irrigation facilities, farm roads, rural electrification, market information systems, research and extension are some of the key success factors towards a prosperous agricultural sector. Agriculture needs to adequately develop such important components.

Storage facilities and other post-harvest infrastructures are to be set up initially at strategic locations so as to enable more farmers to use the facilities. Refrigerated vehicles for vegetable transportation are also required to maintain the quality and freshness. Availability of such basic infrastructures would greatly boost and diversify production.

Lack of information

Lack of market information on the price, demand and supply situation, market outlets are the adverse factors constraining farmers from producing large quantities. Since farmers are not aware of the price and demand trends, they tend to sell at a price offered by the middlemen or traders.

Transport constraints

The following transport constraints were noted :

- Distance from the nearest urban areas.
- Poor road conditions.
- Closure of roads during monsoon due to floods and landslides.
- High transport costs .

Summer in the region coincides with the monsoon season during which many parts of district remain cut-off due to landslides this result in goods getting stranded either on the road side or in the production areas.

Prospects of Diversification

The prospects of agricultural diversification in West Kamang are bright. The district has a wide range of climatic conditions and has the potential to produce many varieties of agricultural produce. The marketing constraints mentioned above have to be addressed in order to make agriculture a viable economic enterprise generating employment opportunities and income for the rural

populace. The marketing channels also need to be well established in order to provide an effective marketing system.

Vegetable crops gaining commercial importance both in domestic and neighbouring state's markets would be promoted through :

- Identification of crop varieties suitable for specific potential areas.
- Providing technical information and guidelines for production of crops.
- Providing appropriate post-harvest technologies.
- Assured supply of quality planting materials and other production inputs.

Given the multitude of agro-ecological conditions, the off-season vegetable production can be expanded to exploit the vast markets.

Organic Production

With the world increasingly becoming conscious about health, production of organic crops in the diverse agro climatic conditions has been seen as a key to the success in the agriculture sector. The NSSO survey data on agriculture practices has shown that the northeast hill states have engaged in traditional practices and reveal a tendency towards organic agriculture that can be harnessed for the economic development of the region with ecological benefits, in fact the present government is dreaming of transforming the entire Northeast into an "organic region", some states are already on the job to alter the agricultural mode from inorganic to organic. Union finance minister Arun Jaitley in his maiden budget of 2013-14 set aside Rs 100 crore for developing organic farming in the Northeast.

In case of Arunachal Pradesh, thetraditional farming system has practiced mostly without external inputs and chemicals. In fact in the state, out of the total Gross cropped area of about 214500 hectare, only around 20% is under fertilizers and agrochemicals and around 80% area is under no chemical fertilizers and synthetic agrochemicals. "The consumption of Chemicals fertilisers is as low as 3.42 $KgHa^{-1}$ (nutritional basis) as against the national average of 140$KgHa^{-1}$ and average of North East (40.76 $KgHa^{-1}$)" (*Purkayastha, 2012*). No doubt there is immense scope for Organic Farming in the vast areas of Arunachal Pradesh, but there are many impediments like Non availability of accredited certification Agencies in the state, Non availability of regular market; Lack of Research and Technological support due to non-existence of State Agriculture University. Hence a lot has to be done in this front.

Recommendations for Policy Implications

The findings of the study have several policy implications and indicate that the government should formulate a strategic action plan to promote diversification in a time-bound manner. It is observed that majority of the farmers belong to marginal and small category. These farmers diversified more within the crop sector relative to other farm categories, firstly because, the yields from high value crops mainly fruits and vegetables were higher than that food grain crops. Secondly, the returns were more regular and faster as compared to food grains. Lastly, due to small size of landholding at their disposal, these farmers have tried to maximize their returns from their small holdings by allocating more acreage to high value crops.

The cost involved in the production of high value crops is much higher than in the production of foodgrains and the cost involved within the production of high value crops, material cost – seeds, fertilizer, pesticides and other agro-chemical – is much higher than the labour cost, and these material input are purchased by the farmers from the middlemen at the market price or in most instances at higher than the market prices due to non-availability of these inputs in the local market. As a result, most of the farmers are forced to take loans from these men, which in turn leads to indebtedness of many farmers and hence reduces their bargaining power at the time of harvesting. Hence the government should make loan available to them through the cooperatives or organise loan and /or subsidy scheme for the farmers to purchase necessary agricultural inputs like – seeds, fertilizer, pesticides and other agro-chemicals etc. This will not only help in reducing the cost of production of these crops but will also help in reducing farmers' dependency on middleman.

Introducing improved technologies to the farmers is essential along with the required funding opportunities. Training of farmers in new technologies and processes involved in diversification will not only be instrumental in increasing farmers' income but also improve their technical ability to engage in diversification,

Development of infrastructure facilities is a prime requirement. An improvement of conditions of the roads, supply of electricity, telecommunication and irrigation essential for commercial vegetable production system is very much essential.

The transaction costs associated with the flow of resources and products between districts and regions need to be reduced. This is so high that the

gains from the production of surplus can flow to areas producing non-surplus, which in turn are required to support the production of surpluses.

Commercially oriented, efficient and effective extension service is a prime necessity to eradicate lots of mal-practices in production and marketing, especially in the vegetable cultivation. It will help farmers to apply better and proper cultivation technologies which will reduce the cost of production and enhance the quality of production. Further marketing extension service in the marketing can help farmers take correct decisions in marketing practices. It is a necessity to establish a market information service, which is very much lacking for these farmers.

At the initial stage, involvement of the state sector in marketing is a necessity due to highly influential middlemen. In the region it is observed that market system is dominated by the middlemen, since these men have an agreement between themselves on buying price, as a result there is no competition among these men in buying the crops. Hence public sector involvement is important to minimise the non-competitiveness of marketing and for ensuring competitiveness.

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Postmodern Concerns in Mahatma Gandhi's *Hind Swaraj*

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Abstract

Originally written in Gujarati and published in 1909, Hind Swaraj is the only work by Mahatma Gandhi which he himself translated into English in 1910. Hind Swaraj is pre-occupied with the very disease – modernity – and looks at the glorious ancient Indian civilisation for cure. Both postmodernism and postcolonialism are critical of modernity. Since, Hind Swaraj is also a critique of modernity, therefore, it is possible that it contains in itself certain postcolonial and postmodern trends.Like Postmodernism, Hind Swaraj too repudiates the enlightenment and its aftermath. It strongly deprecates the modern industrial civilisation. However, Gandhi regards the political rise of the masses as belonging to the bright side of modernity. Hind Swaraj aims at establishing a multicultural and pluralistic society in India, an environment that allows co-existence, mutual co-operation and communal harmony. It counters European ideology by feminizing politics.It explains Gandhi's concept of 'Swaraj' and home-rule.

Key Words : Mahatama Gandhi, Hind Swaraj, Postmodern Concerns, Critical Analysis

Introduction

Hind Swaraj is Gandhi's seminal work. It was originally written in Gujarati and published in1909. It is the only work by Gandhi which he himself translated into English in 1910. *Hind Swaraj* challenged modern

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civilisation,Western hegemony, Cartesian Enlightenment, colonial regime, racist ideology, capitalist economy and exploitation of labour. Gandhi, like Michael Foucault,studies culture in terms of power relationships. *Hind Swaraj* is pre-occupied with the very disease – modernity – and looks at the glorious ancient Indian civilisation for cure.

Postmodernism is another form of postcolonialism. Both of them are critical of modernity. Since, *Hind Swaraj* is also a critique of modernity, therefore, it is possible that it contains in itself certain postcolonial and postmodern trends. Postmodern theory acts in much the same way as the discourse of Orientalism. This is made possible by treating the colonial experience as the central marker which defines the life of postcolonial subjects. Had there been no colonization in India,there would have been no Gandhi and no *Hind Swaraj*. *Hind Swaraj* is a product of British colonial regime in India. Gandhi was simply a catalyst.

The term 'postcolonial' operates at two levels – political and cultural. First it refers to the period after official decolonization. Secondly, in the cultural field, it signifies changes in intellectual approaches. *HindSwaraj* incorporates both the strands. We observe that in the context of theory the cultural is gradually making the political disappear. The term 'postcolonial' is depoliticised and is presented as an abstract idea negotiating an idealized world. Hence, the plan to agree with the absolutist forces shifts to the pages of the text. *Hind Swaraj* is different from this kind of text; it warns against such an alignment because it will hamper the process of decolonization.

Poststructuralism is another offshoot of postcolonial theory; it draws attention from the models developed by Foucault and Derrida. Poststructuralist thinking puts stress on binary constructs – colonial/postcolonial, self/other, center/periphery etc. But for a thinker like Gandhi, it is arhetorical trick deliberately constructed to ensure colonial supremacy in the postmodern world.

Jean Frank Lyotard played a vital role in formulating the conceptual framework for postmodernism. Lyotard argues that 'truth claims' and assumed consensus on which a lot of history and its 'grand narrative' stand are an illusion. Though they talk in terms of progress through rationality, they lack credibility. They impose restrictive boundaries on pluralistic cultural formations. They delimit discourse, exclude and marginalize voices that do not suit the dominant group.

Gandhi echoes the same voice in *Hind Swaraj* when he complains that history is 'a chronicle of violence; it ignores the natural activities of individuals.

History is a record of an interruption of the course of nature. Soul–force, being natural is not noted in history'. (Gandhi,1997:68).Partha Chatterjee remarks that history does not record truth. Truth lies outside history. It is moral, unified, unchanging and transcendental. It can be found only in the experience of one's own life. It can never be correctly expressed within the terms of rational theoretical discourse.

Jurgen Habermas, in his influential paper'*Modernity : an Incomplete Project*' (1980), said that the modern period began with the Enlightenment from the mid-17th to the mid-18th century.During this period a new faith arose in the power of reason to improve human society. The so-called Enlightenment project believes in a break with tradition, blind habit and slavish obedience to religious precepts and prohibitions. It involves the application of reason and logic by the disinterested individual to bring about a solution to the problems of society.This is the outlook which Habermas calls 'modernity'. For him this faith in reason and the possibility of progress survived into the twentieth century.

The Post-structuralist thinkers of the 1970's, such as Derrida and Foucault, repudiated this kind of Enlightenment 'modernity'. They are not ready to put their faith in the scientific method. They question the very idea of reason. They disagree with the idea of human being having an independent existence and regard the individual as the outcome of social and linguistic forces. Derrida in his 1966 lecture "Structure, Sign and Play in the Discourse of the Human Sciences" mentions that in the modern times there has been an extreme break from the past ways of thinking. During the period of the Renaissance and the Enlightenment, white Western pattern of dress, behaviour and thinking was regarded as the centre against which any deviation was treated as marginal. Derrida says that such previously defined concept of the 'centre' and the 'margin' have been 'deconstructed' or undermined in the present time. Now there are no fixed points and we live in a 'decentered' universe. There is no deviation from a well-recognised center. Rather, we have the free play of ideas.

Gandhi seems to agree with Derrida as hetoo, in *Hind Swaraj*, repudiates the Enlightenment and its aftermath. To Gandhi, modern civilisation is a mode of conduct which emerged from the Enlightenment and Industrial Revolution. The Industrial Revolution for him was more than a mere change in the mode of life; it affected people's outlook on nature, human nature, ethics, science, knowledge and economics. According to this outlook, Nature was considered

something to be mastered and possessed at will for the satisfaction of human desires and ambitions. Gandhi was against such an attitude towards Nature. He rejected Western post-Enlightenment modernity because it lacked proper criteria for de-legitimising the violence to its other.

In *Hind Swaraj*, we find a peculiar blending of ethics and politics. Machiavelli separated ethics from politics. To him the interest of the state was of paramount importance i.e. end justified the means. Gandhi rejected the theory of Machiavelli and replaced it with a theory that talked of the union of ethics and politics. He firmly believed that right end can never be attained through wrong means. He uses the following example to illustrate his point:

> The means may be likened to a seed, the end to a tree; and there is just the same inviolable connection between the means and the end as there is between the seed and the tree. (Gandhi,1997:81).

Hind Swaraj rejects the modern West because of its excessive secular and scientific world view. It rejects a culture which does not have a theory of transcendence; it is morally unacceptable. The legitimacy of the modern West as a superior culture came from an ideology which viewed secular society as non-secular one. With the acceptance of this ideology, superiority of the West became an objective criterion of evaluation of other cultures.Even a liberal like J. S. Mill supported this civilizational partition of the world; he used the doctrine of liberty to justify the imperial rule over the world. Gandhi opposed this misrepresentation.

A postcolonial critic like Edward Said vehemently criticises this misrepresentation. He sees Orientalism as a discourse by which European culture was able to manage and produce the Orient ideologically. Said says,

> Orientalism can be defined as the corporate institution for dealing with the Orient- dealing with it by making statements about it, describing it, by teaching it ,settling it, ruling over it, in short Orientalism as a Western style for dominating, restructuring and having authority over the Orient. (Said,2001:5-6).

Both Said and Gandhi discuss this East-West dichotomy through the binary opposition between 'Self' and 'Other'. This concept of binary opposition was not given by nature but constructed by human beings living and acting in concrete relationships of power. Gandhi exposes this satanic relation and criminal nexus throughout *Hind Swaraj*. One important difference between Said and Gandhi is that whereas Said does not hold the Orient responsible for their own slavery, Gandhi does so quiet eloquently:

It is we, the English, knowing men that have enslaved India. The curse of the nation will rest not upon the English but upon us. (Gandhi, 1997:104)

The poststructuralist theorists like Foucault and Derrida accepted that arbitrary use of naked state power over the individual in the modern state was reduced in comparison to the traditional, feudal, pre-modern state. Gandhi seems to support this notion when he says,

My patriotism does not teach me that I am to allow people to be crushed under the heel of Indian princes, if only the English retire. If I have the power, I should resist the tyranny of Indian princes just as much as that of English. (Gandhi, 1997:76-77).

Hind Swaraj is a coherent thesis against industrial civilisation. It strongly deprecates the modern industrial civilisation. It brings to the forefront the intense pain and anger experienced by Gandhi at the flourishing of modern civilisation. However, these experiences are not personal. Rather, they are the suffering and indignation of a whole lot concretised and expressed through an individual. The anger and indictment of modern civilisation is well articulated by Gandhi in the following passage:

This civilisation takes note neither of morality nor of religion. Its votaries calmly state that their business is not to teach religion. Some even consider it to be a superstitious growth. Others put on the cloak of religion, and prate about morality. After twenty years of experience, Ihave come to the conclusion that immorality is often taught in the name of morality . . . This civilisation is irreligion. (Gandhi, 1997:37)

Gandhi condemned modern civilisation not because it was Western or scientific but because its character was exploitation of 'the weaker races of the earth' (Gandhi, 1997:37); it destroyed the 'lower order of creation' (Gandhi, 1997:37) in the name of science and humanism. An appropriate Gandhian metaphor for modern civilisation is not 'disease' but 'curable disease': "Civilisation is not an incurable disease." (Gandhi, 1997:38). In this respect, *Hind Swaraj* is a prescription on the malaise of modernity and Gandhi is one of its physicians.

Gandhi recognises that the political rise of the masses represents the spirit of the times. He regards it as belonging to the 'bright side' (Gandhi, 1997:53) of modernity. His Satyagraha is a political action informed by Truth and Non-violence. It seeks to rejoin in politics and religion; it tests every human action

in the light of ethical principles. When politics is rejoined with ethical principles of truth and non-violence, our activities in the field of economics and science are governed by compassion and welfare.

According to Gandhi, the oneness of life and unity of mankind has been ruptured by modernity. But it is upheld in the central strand of the Indian cultural tradition. Gandhi reinterprets that tradition and offers it as an alternative to the politics of overcoming both traditionalism and modernism. In this reconstructive programme, there is no regression to Hindu traditionalism. Rather it merges the reconstruction of Indian tradition with the reconstruction of post-Enlightenment modernity.

Like Karl Marx, Gandhi attacks the bourgeois. It was the middle class and the princely states who provided much support to the British regime. According to Gandhi, if the middle class takes hold of the reign of power after the British withdrawal, it will be 'English rule without the Englishman'. (Gandhi, 1997:77). It means the same sort of government with armed forces and the whole bureaucratic machinery of the modern nation-state. Gandhi opposes this system of government. Marx also finds the same nexus among police, bureaucracy and merchants. It is exploitative and extremely harmful to the general interests of the population. To overcome this problem, Gandhi said that 'Swaraj' (home-rule) should begin at the bottom of society, with the poorest of the poor. He was against a society in which a few dominated and the rest suffered.

To Gandhi, the structure of the future Indian society will be neither linear nor pyramidical. It will be a structure composed of innumerable villages where there will be ever widening circles. Human life will not be based on a hierarchy with the rich depending on the poor. It will be an oceanic circle in which the individual will occupy the centre.

One of the main postulates of postmodern concern is the conducive atmosphere for a multicultural and pluralistic society. Gandhi had envisioned it in *Hind Swaraj* long before the term 'postmodern' was applied to a particular temper in creative writing and critical theory. He has a project of establishing a multicultural society in India, an environment that allows co-existence, mutual co-operation and communal harmony. As an editor, he replies to the reader:

India cannot cease to be one nation because people belonging to different religions live in it. The introduction of foreigners does not necessarily destroy

the nation, they merge in it. A country is one nation only when such a condition obtains in it. That country must have a faculty for assimilation. India has ever been such a country. (Gandhi, 1997:52)

The above-quoted passage contains the vitality of Indian sanatan dharma and perennial human civilisation. The term 'faculty for assimilation' stands for the Sanskrit word *Samas*. *Samas* is a grammatical technique of forming a new word by integrating two or more pre-existing words. Something of the old identity is retained in the new compound word but the latter has an identity of its own. When Gandhi says that the Indian nation has been created by a process of Samas (faculty for assimilaton), he means that though the nation is formed out of distinct ethnic, religious and linguistic groups, the new identity that emerges has an identity of its own. India in this sense is a nation.

Gandhi is a cultural assimilationist. He means to propound that all Indians are supposed to share certain common values and symbols; at the same time they should retain their sub-national identities. He says that it was the British who perpetuated the myth of divided India; before their advent India was culturally one. Religion and nationality are not synonymous. Hindus and Muslims are blood brothers and they must learn to co-exist. This way Gandhi laid the foundation of national integration and communal harmony.

In the postmodern period, 'subjects' are seen as constructed through discourse or ideology. Antonio Gramsci observed that the ruling classes exercisea 'hegemony' through an ideological domination which includes a mastery over the people's 'commonsense' of things. Louis Althusser has similar opinion in this regard. He opined that we are all 'subjects' of ideology. It requires us to take our places in the social structure. This interpretation works through 'state apparatus' in law, religion, education etc.

But Gandhi in *Hind Swaraj* does not seem to agree with Gramsci and Althusser fully. He holds that though the Indians are ideologically dominated by the British hegemony but they themselves are also responsible for their slavery:

> The English have not taken India; we have given it to them. They are not in India because of their strength, but because we keep them. (Gandhi, 1997:39)

The idea of the above statement undermines all the conventional wisdom on imperial conquest. Here, Gandhi focuses on the innate, inner strength of the

oppressed. He wants us to know that no one can rule us without our consent. That is why he once called 'Swaraj' nothing but a process of self-purification:

> We have permitted foreign rule to spoil us; by purifying ourselves of it, we are simply returning to our natural, pristine state.(Gandhi, 1997:40)

Such a theory of self-cleansing assumes that our original natures are not corrupt or fallen but perfect and divine. What Gandhi does is to build a theory of decolonization which puts emphasis upon self-realization and self-scrutiny instead of attacking the oppressors. In this respect Gandhi is unique in the world.

Hind Swaraj attempts to valorize the 'spiritual' East and rejects the 'material' West. The West judged the Indian culture in its own paradigms and subsequently contrasted it with Western prototype. Gandhi says,

> I believe that the civilisation India has evolved is not to be beaten in the world. Nothing can equal the seeds sown by our ancestors. (Gandhi, 1997:103)

Gendering the nation is considered as another form of Orientalism. It integrates women and tradition as an indigenous space of purity and spiritualism. Gandhi's political discourse is a case in point. In *Hind Swaraj*, he countered European ideology by feminizing politics. The British celebrated masculinity and aligned their courageous rule over the colonial subjects with masculine power. But Gandhi based his resistance on the power of feminine virtues-purity, tolerance, self-control and spiritual strength.

Gandhi's criticism of T. B. Macauley and modern education is based upon bookish learning, neglect of dharma and character and an aim to produce clerk. *Hind Swaraj* lays down principles of how a balance can be introduced in the educational system. Gandhi holds the Indian elite equally responsible for the mental slavery of India. He says,

> It is worth noting that, by receiving English education, we have enslaved the nation. Hypocrisy, tyranny etc. have increased; English knowing Indians have not hesitated to cheat and strike terror into the people. (Gandhi, 1997:104).

Hind Swaraj explains Gandhi's concept of 'Swaraj' and home-rule. 'Swaraj' as self-rule is the rule of the self by the self. It is the rule of the mind over itself and the passions of greed and aggression. In particular,self-rule enables one to pursue *artha* (wealth/power) and *kama*(pleasure) within the bounds of *dharma* (religion). 'Swaraj' is to be experienced within one's own self. The inner experience of self-rule enables the citizens to reinforce their political

ethics by their aesthetic feelings. Hence, the Gandhian concept of 'Swaraj' holds the key to solve contemporary problems that we face today in a globalised world. The significance and effectiveness of any postcolonial ethos cannot be grasped unless they are put within the broad framework of 'Swaraj'.

The need for true self- knowledge has special urgency for Gandhi because modernity tends to present a distorted picture of the true self. Modern politics presents the self as a rational accumulator and consumer of property. The modern self lives, moves and has its being in the closed circle of rational egoism and rational choice. As a result home-rule in the modern sense uses coercive instruments to preserve this conception of self.

Gandhi's doctrine of 'Swaraj' questions the above conception of self. He modifies this conception with insights from Indian civilisation. He relies mostly on *Bhagvad Gita.* To Gandhi, cultivation of virtue of fearlessness is necessary for Swaraj. It frees the self from fear. Training of mind is crucial in Gandhi's search for the self. Truth or self-knowledge makes it possible for the embodied self to set its course in the right direction. Only then 'Swaraj' can establish a state of affairs in which mind rules the senses, soul rules the mind and the self rules the soul.

Any decent civilisation is governed by such principles as sense of duty, mastery over mind and body, self-knowledge etc. Gandhi incorporates all these principles under one umbrella i.e. 'Swaraj'. For Gandhi, it is 'Swaraj' that can guarantee individual freedom, freedom from external threat, human rights and multicultural society. Gandhi says,

Civilisation is that mode of conduct which points out to man the path of duty. Performance of duty and observance of morality are convertible terms. To observe morality is to attain mastery over our mind and our passions. So doing we know ourselves. (Gandhi, 1997:67)

Today, the question before us is how to bring the Gandhian principles in our day-to-day life. When the farmers of Nandigram refused to allow their land to be acquired for a Special Economic Zone (SEZ), they were not only defending the Mother Earth but also the Gandhian values and ethos. What the activists of Narmada Bachao Andolan under the leadership of Medha Patekar have been doing for the past many years is basically a long felt realization that development cannot be achieved at the cost of the exploitation of nature. We have to remain in connection with nature so that humanity may have a future.

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Language Curriculum in Arunachal Pradesh : Prospects of the Third Language

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Abstract

The three language formula emphasizes on at least three languages to be taught at the school stage and that the provision for teaching should ensure that a student passing out of the secondary school has an adequate knowledge of the three languages and also that the teaching of the language should be provided for not less than three years in a continuous process. It has not been properly implemented in the context of linguistic scenario in Arunachal Pradesh. English and Hindi still continue as the mediums of instruction, and Sanskrit is taught as the third language in almost all the schools from Class VI till class VIII. Today attempts are being made to include a regional language as third language in some areas of the state. This paper revisits the evolution of language curriculum in the schools of Arunachal Pradesh and reviews the prospects of third language as a medium of instruction.

Keywords : Three Language Formula, Third Language, Medium of Instruction, English, Arunachal Pradesh

Introduction :

Withstanding hundreds of languages existing in the world, English has evolved to be the global language; the language of science and technology, commerce and media.Though English has the status of being the official language, it is the most important link language in India. It is also the most commonly spoken

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language after Hindi and probably the language most read and written. The teaching and learning of English began when the British started looking for Indian mediators who could help them to administer India. English continues to be a prestigious language and is now the language of administration, judiciary and medium of instruction in the schools. It has assumed the role of lingua franca within the country. This paper investigates the prospects of evolving a third language in the context of school education in Arunachal Pradesh.

Language Policy

After independence, apart from the NCERT and the UGC, the two high powered apex authorities which formulate and govern the educational policies of the school and university education respectively, the Government of India appointed/convened many commissions/ committees like Radhakrishnan Commission on University Education[1](1948-49), the Kher Commission on Primary Education (1951), the Secondary Education Committee (1953), Conference of Chief Ministers in 1961, Kothari Commission on the Indian Education System (1964-66) and New Education Policy (1986) forregulating public education in the country. Among the many measures suggested, the adoption of the three language formula in all schools is a very important one. The for mula recommends the use of a regional language as the first language with Hindi and English as the Second and the Third Language. The National Curriculum Framework 2005, which lays down broad guidelines for teaching and learning, sums up the views of experts when it says: "A renewed effort should be made to implement the three-language formula, emphasising recognition of children's home language(s) or mother tongue(s) as the best medium of instruction. These include tribal languages." It has been spelt out in the National Policy on Education 1986 that "mother tongue has organic connection with thought; hence the best means in developing cognitive abilities in the children is education through their mother tongue". The National Policy of Education directs all the States in the country to create space for children's language in their schools at least at the primary school level when the children are still at the formative stage. Education in the mother tongue is guaranteed in our constitution and recommended in the National Curricular Framework, 2005 and The Right of Children to Free and Compulsory Education Act, 2009. However, for the tribal children in Arunachal there is no provision for education in the mother tongue. Education of such children imposes an unfamiliar school language on them, often leading to large scale failure. The three language formula has not been adequately implemented in the

context of Arunachal Pradesh[2]. Till 1972 Assamese was the medium of instruction which was replaced by English[3]. English is also the official language of the state. Hindi is dominantly used in oral communication among the people of the state and can be said to be the lingua-franca of the state. Even though it is so, Hindi cannot be said to be the native language of the state. English, though foreign to the children till they join the school, has to play central role in their future career. English (officially) and Hindi (unofficially) serves as medium of instruction; Sanskrit is taught as the third language in almost all the schools from Class VI till class VIII. The children start learning through English and Hindi which are not their mother tongue or the regional languages from the very first day in schools and Sanskrit as a subject is introduced to the students as the third language in the upper primary level. All the three languages are quite different from the other and new for the native learner. They are equally alien to the native learner and do not connect with the local cultural milieu the way a mother tongue would have. This poses a serious hindrance in the child's learning process.

English in Arunachal Pradesh

In Arunachal, English is the medium of instruction starting from the pre-primary to the higher levels of education. It is importantto acquire knowledge of English, a language which provides greater opportunities in the global market of higher education and employment. Irrespective of how richly and rapidly or to what level regional languages develop, English will continue to occupy a crucial role of importance in Arunachal for the foreseeable future. However, imposing the learning of a non-native language (English) as the first language on students, right from their preparatory levels could stand as a hurdle in their basic education. The children would obviously find it easier to learn through the native language. The early stage of education should be fun for the students. Rushing them to acquire a new language from the very beginning will come in the way of healthy development of their identity construction, language learning and critical thought. If primary education is in English and the student finds difficulty in understanding the concepts which are new to them, learning would become an arduous task. 'It would be barbarous', said Rousseau, 'to twist a child's nature and kill his joy in preparing him for a future which may not be his' (Elwin,1957: 199). Current researches suggests that learners entering the school are able to learn best through their mother tongue, and that a 'second' language (such as English) is more easily acquired *only after* the learner has already acquired a firm grasp of his/her native language.

The higher education syllabus in the state places emphasis on the use of

English language in formal, informal and academic institutions as a compulsory subject for all the students. Then why can't the students be taught only the fundamentals of English in the school, especially at the primary level? They can be given the basic education of English through a process of oral translation into their mother tongue. Classroom participation is imperative for the students to grasp the ideas imparted to them. The teaching- learning process is disrupted when the students are not fluent in the language used as medium of instruction. It is not argued here that the use of English as the medium of instruction leads to poor communication skill in other languages at a later stage, but the emphasis of the paper is on the importance of language teaching-learning with fun. The intention is to argue for a prospect of mother-tongue education in the context of Arunachal Pradesh, and its implementation,along with English.

Attempts are being made to include a regional/ local language as third language in some of the areas of the state. 'The language problem", says Mr. Nehru 'is almost exceedingly important from the psychological point of view. The best of solutions can come to nought, if understood or misinterpreted by the party concerned. It is absolutely clear to me that Government must encourage the tribal languages. It is not enough simply to allow them to prevail. They must be given all possible support and the conditions, in which they can flourish, must be safeguarded. We must go out of our way to achieve this' (Elwin,1957:202). For some years now, educationists have proposed that students should be taught in their mother tongue for at least during the first three years of school before switching over to English. If this proposal is to be taken seriously, there are a number of issues which will need to be considered and clarified: language development, curriculum development, teacher education and implementation of the policies. It wouldn't be an easy task within a multilingual state which has 26 major tribes and many more sub-tribes where each tribe speaks a different language and even in each of these languages there are many variant forms. Another important aspect in this regard is the absence of scripts of these languages. The languages in Arunachal do not have standard written forms to carry academic discourse effectively and to function as full-fledged languages of learning and teaching even at the foundational phase except in the case of Bhoti which is taught in almost whole of West Kameng District and Tawang and Thai Khampti in Lohit and Namsai Districts. The tribes that come under the larger *Tani* constellation speak languages having slight variation. Verrier Elwin had, in his book *A Philosophy for NEFA*, indicated the possibility of the languages of the tribes of the Tani group to ultimately grow into one great language.

The Galo language, which comes under the larger umbrella of theTani group has been worked upon vastly by scholars, linguists and academicians. It has been introduced in Likabali[4], a small town in West Siang District of Arunachal Pradesh, as a third language since 2004 with much effort by a teacher Duri Taipodia. The regional language education is incorporated in the upper primary level in the schools of this area. Galo, as the third language in the education curriculum has also been introduced in few more schools in the district. Duri's effort is part of an ongoing endeavour by the local intelligentsia to develop'dictionaries' of/in their languages, a movement noticed across the state.In fact, the Three Language Formula has never been implemented in Arunachal because of this difficulty in evolving regional languages.For example, the aforesaid attempt in introducing teaching of Galo language in Likabali is at upper primary level, and *not* at preparatory level. Thus it does not fulfil the actual objective and spirit of the TLF. It merely replaces teaching of languages like Sanskrit at this level. In other words, the teaching of regional languages at this stage does not address the cognitive aspect of teaching learning process; it at best fulfils a cultural/ political objective of a language and its speakers. This anomaly is an important lesson in our formulation of TLF in Arunachal.

In recent years Government of Arunachal has taken up intiatives to develop mother tongues of Arunachal by conducting various workshops and seminars.[5] Though implementing an academic language of learning and teaching entails a number of large-scale projects like revision of the spelling; elimination of dialectal variation in the writing of the languages; enlargement of their vocabulary together with the creation of modern dictionaries; and the codification of their grammars based on the actual current practices of the speech communities, it is not an impossible task. However such a task cannot be achieved merely through the endeavours of a few scholars and groups working in isolation. This will need active involvement of the entire intellectual speech community of each language in the development of the language as academic discourse by strenuously attempting to use the language to write scholarly articles, present conference papers, produce textbooks and the numerous other activities which require a rigorous academic register. Text books to be prepared should be done by 'insiders' like the local writers, academicians, and local linguists who would be well aware and acquainted with the local environment. Stories, proverbs, folktales, basic grammar of local languages and so on should be incorporated in the textbooks. The mother tongue or a regional language should be used in the initial stages of primary sections as medium of instruction to ensure better

achievement in language and so that the child does not face much difficulty in understanding the concepts and meanings of what is being taught. If the languages in Arunachal are to be used as languages of learning and teaching in the classroom, the first and most obvious step that may be taken up is to translate the present prescribed school syllabus into these languages and this would be a very large undertaking, which will require the provision of a very large resource, both material and human, both from community and the government institution.

The government has a pivotal role to play in encouraging the mother-tongue instructional programme. Teacher-training institutions such as colleges of education and the universities have crucial roles to play in making sure that teachers in training recognize and appreciate the importance of the mother-tongue instructional policy in the lower primary level. To suit Indian students, there have been many suggestions in recent times even to 'Indianise' English. That is, to contextualize the learning of English to local situation without losing its practical utility as an international language. There have been different attempts to get rid of the rigidity of English in India.Asim Ranjan Parhi has extensively worked on the prospects of Indian English in the English curriculum of the country. It is an attempt to tamper with the otherwise rigid and receptive language of English. He has proposed the blueprint for a mass friendly and Indianised English in the curriculum. His argument suggests an alternative way for more such works in the direction of curriculum reform.

Our paper also tries to visualize and ascertain an attempt in curriculum reform through the existing framework of TLF where both the cognitive aspect of the child and encouragement of regional language are taken care of at the same time. Opening up the curriculum fixity or contextualizing the TLF according to the local needs is an important educational reform wanting in the existing educational system of Arunachal.

Conclusion

It is difficult to implement the Three Language Policy in: (a) pre-literate societies, (b) multi-linguistic societies. One reason is the problem of receptivity. In currently developing societies, where ethnic assertion carries along with it linguistic aspirations, the question of having a uniform 'third language' becomes difficult to implement. The practicality of learning a language also impedes the prospect of third language education. Established languages are preferred over languages considered 'regional' or 'tribal'. Involvement of professional

linguists (in developing scripts where there is none), educationist, local tribal literary bodies and government initiatives must sync together if the goal of Third Language is to succeed in promoting learning and promotion of minor languages and tribal dialects. The scenario in Arunachal is a confusing one: established languages have both acceptance and dominance in formal learning, while the third language front is yet to take proper institutional shape.

1 The information relating to the setting up and recommendations of various committees set up by the government of India, otherwise referred to in many sources, is derived from the *National Curriculum Framework 2005* downloaded from http://www.ncert.nic.in/rightside/links/pdf/framework/english/nf2005.pdf.

2 Based on findings from my fieldwork.

3 *Report on Post Enumeration Survey of DISE Data: Arunachal Pradesh*, SSA, Government of Arunachal Pradesh, 2010, p. 7.

4 Memo No. LBHS/01/03-04/307 cited in the 'message' of Sub-Divisional Officer, Likabali in Tai Duri, *Gomnyir (TaniAgom: Galo)*, Likabali, 2013.

5 www.ciil.org/download/programmereport/ language_policy_in_Arunachal_Pradesh.pdf accessed on 21.08. 2013.

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Jurisdictional Issues in Cyberspace

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Abstract

The internet has acquired an important place in our lives today. There are significant questions as to which law or which country's interpretation of the law is to be applied in any given situation. This is because the relatively straightforward rules of yesteryears, namely lex locus delectii (the law of the place of the wrong) and lex locus contractu (the law of the place of the contract) no longer seem to hold good in the context of the problem regarding jurisdiction over the internet because no one country or entity can claim to own the internet or any portion thereof. These rules of contract and rules of jurisdiction require careful reconsideration in the light of the growing number of transactions, both commercial and non-commercial, that take place over the internet today. This Paper attempts to chronicle some of these issues and suggest modifications in the manner in which the law is applied in this regard.

Keywords : Jurisdiction, Cyberspace, Intermediary, IT Act, Internet.

Introduction

The term 'cyberspace' has its origins in the language of Ancient Greece. It is etymologically derived from the word 'cybernetics' which was first used by Norbert Wiener[1] in the year 1948 in his pioneering work in the area of electronic communication and control science. This term, 'cyberspace' was used in science fiction and Hollywood during the late 1970s / early 1980s. Thereafter, it began to be adopted by computer professionals and by the 1990s, became a household term in the United States.[2] During this period,

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the uses of the internet, networking and digital communication grew manifold and the term 'cyberspace' began to represent the many new ideas and phenomena that were emerging.[3] Today, individuals use the internet and cyberspace for research, reading articles and news stories from across the world, social networking, exchange of ideas, sharing of information and various other purposes. In the present day and age, cyberspace is defined more by the social interactions involved rather than its technical implementation.[4] Cyberspace is a giant network of computers that interconnects innumerable smaller groups of linked computer networks. Many of these networks are connected to other computer networks so that each computer in every network can communicate with computers on any other network in the system.[5]

The term 'jurisdiction' is derived from the Latin words *'iuris'* (meaning 'law') and *'dicere'* (meaning 'to speak'). 'Jurisdiction' is the process by which authority is granted to a formally constituted legal body to deal with and make pronouncements regarding a particular issue. It can be defined as the power and authority constitutionally conferred upon (or constitutionally recognized as existing in) a court or judge to pronounce the sentence of the law, or to award the remedies provided by law, upon a state of facts, proved or admitted, referred to the tribunal for decision, and authorized by law to be the subject of investigation or action by that tribunal, and in favour of or against persons (or a *res*) who present themselves, or who are brought, before the court in some manner sanctioned by law as proper and sufficient.[6] By implication, it is the power to administer justice within a defined area with a certain sense of responsibility. The term is also used to denote the geographical area or subject-matter to which such authority applies. Areas of jurisdiction apply to local, state, federal and international levels. In more simple language, jurisdiction helps us to answer the question as to "What law must I obey?"

Law is a statement of circumstances in which public force is brought to bear upon men through the courts..... People want to know under what circumstances and how far, they will run the risk of coming against what is so much stronger than themselves, and hence it becomes (the lawyer's) business to find out when this danger is to be feared. The object of our study of law, is the prediction of the incidence of public force through the instrumentality of the courts.[7] It is this question as to "What law should be obeyed" that is of utmost importance in the world of cyberspace today. This is the question that this Paper attempts to answer.

Problems of jurisdiction

Cyberspace, as we know it today, has made a complete mess of our pre-existing notions of judicial norms and principles. Which law or which country's law will apply to the case wherein a German website which has its server farms located in a Scandinavian country, publishes some allegedly defamatory content against a public personality in India, this content is downloaded by a Bangladeshi national living in Sweden who allegedly makes Compact Disks (CDs) out of this content and puts it on sale in the US market? This, alas, is not a question meant only for teachers of Private International Law but also for all of us who deal with the internet and cyberspace on a daily basis.

The celebrated Napster case[8] presented an interesting facet where the 9th Circuit Court ruled that the music file-sharing system known as "Napster" committed repeated infringements of U.S. copyright law as millions of users all over the world freely uploaded and downloaded sound recordings which were protected under U.S. copyright law. This led to problems regarding the enforceability of the decree passed by the U.S. court outside the territorial jurisdiction of the United States. Napster faced tremendous challenges as it attempted to comply with the ruling and block access to multitudes of files and attempted to reinvent itself as a subscription based service that paid royalties to the music industry.

The unique 'peer to peer' file sharing system that was pioneered by Napster allowed users to load files onto their own computers by connecting their own computers to the Napster system, thus allowing any other similarly placed user, anywhere in the world, to retrieve that particular file as and when (s)he wanted. Users were thus, given the choice to access music files on their personal computers at any time and place of their choosing, without any kind of a reference to the original creator of the music. Napster, on its own, did not maintain any kind of a storage system that stored and reproduced these songs / music files. Such a system depends upon the usage of highly creative and sophisticated computer software. The music files were stored, duplicated, transferred and accessed using the then nascent MP3 technology which allowed for efficient reproduction of music files in computer-readable formats. It was these reproductions and re-distributions of music files which gave rise to the question of violation of moral rights of the creators of the original music.

The usage of these music files by computer users across geographical boundaries generated consternation amongst members of the music industry

because these works were protected under copyright law and the computer users who had accessed these files, had neither sought the permission of the creators nor had the then owners of copyright granted any kind of a license or permission for further dissemination of their works. Thus, the music industry feared that the free sharing of their work on media like Napster would impact sales of their works.

Members of the music industry contended that this sharing of copyrighted works by Napster did not fall within the purview of the concept of 'fair use' and did not fall within any of the exceptions enumerated within either the Digital Millennium Copyright Act[9] or the Audio Home Recording Act[10]. These contentions were, more or less, accepted by the U.S. court and it laid down that there was a commercial use in the "repeated and exploitative copying" of the works, even if these were not put up for sale by the defendants in the instant case.[11] Further, the Court found a commercial intent in the repeated copying of the music files so as to "save the expense of purchasing authorised copies".[12]

Enforceability of judgments pronounced in foreign courts

Once the Napster verdict was out in the open, it led to further problems with regards to enforceability as the internet knows no geographical boundaries and there were even calls for the constitution of an international body on the lines of the International Criminal Court to administer and adjudicate cases involving the internet and cyberspace. This takes us to the fundamental issue raised by John Austin regarding the validity of international law when it comes into conflict with municipal law and the concept of states' sovereignty.

Returning to the issue of jurisdiction *per se*, we will do well to remember that wars have been fought over this issue:

> He (King George III) has combined with others (members of British Parliament and their supporters and agents) to subject us to a jurisdiction foreign to our constitution; and unacknowledged by our laws; giving his Assent to their Acts of pretended Legislation.[13]

The question of jurisdiction is important in all walks of life and the internet and cyberspace are no different. Clients need to know as to which authority has the power to shut his / her business down, fine him / her or punish him/

her. Going back to my earlier example about the German website owning server farms in Scandinavia, this is how the jurisdictional problem can be appreciated. The German company puts up bits on its server which is owned and operated by a company that runs server farms in Scandinavia; these are then transmitted to the computer system of Mr. A, who is a Bangladeshi national and currently lives in Sweden; the information that is contained in the bits uploaded by the German company is apparently defamatory to an Indian public figure; Mr. A then downloads this content and makes CDs out of this content and offers it for sale in the US market. In this case, the bits put up by the German company have caused the computer of Mr. A to do "something", i.e. display the file containing the allegedly defamatory content and it is this content that is downloaded and made available to others in USA in the form of CDs. The question that stares the Indian public figure, whose reputation has apparently been harmed, is that "in which forum can he go to obtain an injunction against the German company and / or the Bangladeshi national who makes the CDs". This involves questions of personal jurisdiction, internet jurisdiction, choice of law (which is the subject matter of private international law) and issues of enforceability.

In the aforementioned case study, if both Mr. A and the server farm were located within the same country, the problem would be a lot simpler. There are a few decided cases which help us to answer the question raised by the Indian public figure in the previous paragraph. The United States Supreme Court in the case of *Calder v. Jones*[14] laid down that a court within a state could assert personal jurisdiction over the author and editor of a national magazine which published an allegedly libellous article about an actress who was the resident of that state (even though the principle place of business of the magazine was located in another state), when the magazine in question enjoyed wide circulation in that state.

The Indian position with regards to intermediaries

Indian courts were confronted with the issue of defamation over the internet in the case of ***Google India Private Limited v. Visaka Industries Limited***[15]. The complainant in this matter was engaged in the business of manufacturing and selling of asbestos cement sheets and allied products. In the course of the complaint, it was alleged that a person by the name of Gopal Krishna was the co-ordinator of 'Ban Asbestos India, which was an online group / discussion forum that was hosted by Google. This person allegedly published certain defamatory articles on this online forum, aimed at a single

manufacturer of asbestos cement products, i.e. the complainant in the instant case and several leading politicians of the country like G. Venkata Swamy[16] and Sonia Gandhi[17], who had nothing to do with either the ownership or management of the complainant company. These articles were made available on Google's online pages for world-wide audience. It is to be noted that the offences were perpetrated from 31.07.2009 onwards i.e., prior to the amendment to the Section 79[18] of the Information Technology Act, 2000 which came into effect from 27.10.2009.

The petitioners contended that the actions of intermediaries such as Google Inc., which was only a service provider providing a platform for end users to upload content, did not, amount to publication under law and consequently, the question of holding such intermediaries liable for defamation did not arise. The Hon'ble High Court of Andhra Pradesh was pleased to hold that Section 79 of the Information Technology Act, 2000, as it stood enacted in the year 2000, exempted network service providers from liability under the Act, rules or regulations made thereunder for any third party information or data made available by him. However, it did not exempt a network service provider from liability (much less criminal liability) for the offences under other laws or more particularly under the Indian Penal Code. Furthermore, Section 79 thereof exempted a network service provider from liability, only on the basis of proof that the offence or contravention was committed without his knowledge or that he had exercised all due diligence to prevent the commission of such offence or contravention.

In the year 2000, a *non-obstante* clause was added to Section 79 so as to keep the application of other laws outside the purview in a fact situation covered by the said provision. Consequent to the said amendment, intermediaries like network service providers can claim exemption from application of any other law in respect of any third party information, data or communication link made available or hosted by them only if they fulfil the requirements prescribed under Section 79 (2) of the Act. Furthermore, as per amended sub-section (3) of Section 79, the exemption under Sub-section (1) cannot be applied by any court and cannot be claimed by any intermediary in case the intermediary entered into any conspiracy in respect thereof. Also, the intermediary cannot claim exemption under sub-section (1) in case they fail to expeditiously remove or disable access to the objectionable material or unlawful activity even after receiving actual knowledge thereof.

In the case in point, in spite of the First Respondent issuing notice to the Petitioner regarding the dissemination of defamatory material and unlawful activity on the part of Accused no. 1 through the medium provided by the Petitioners themselves, the Petitioner organisation did not make any effort to block the defamatory content or stop the dissemination of unlawful and objectionable material directed against the Respondents. Therefore, the Hon'ble High Court held that the Petitioner could not claim any exemption either under Section 79 of the IT Act (as it stood originally) or Section 79 of the Act, pursuant to the amendment of 2000.

Google Inc. subsequently preferred an appeal against this decision of the Hon'ble High Court of Andhra Pradesh before the Supreme Court of India and hearings in the matter commenced on 27.01.2014. India represents one of the last great untapped markets for Internet companies. The number of Internet users in Asia's third largest economy is likely to jump to more than 500 million by 2015 from around 200 million today, according to an estimate by consulting firm McKinsey and Co. It is for this reason that the outcome of this case is keenly watched and many observers feel that the outcome of this case will help decide as to how internet companies do business in the growing south Asian market. Other search engines, blog sites, social media sites and even online retailers could be affected by the verdict in this case. The hearing before the Apex Court, could take months before a final judgment is delivered in the matter.

Google India argued that it could not be held liable for content posted by users on a platform which is hosted by its parent company Google Inc. The author of the allegedly defamatory post maintained that he still stood by his post, even though he had not been formally informed of either the charges against him or the present case and maintained that Google's stand in court had actually supported the freedom of expression, which is a Fundamental Right under Part III of our Constitution. In case this matter were to be decided against Google in the Supreme Court, it would be "liable for criminal activities on its network," and have to step up its monitoring of what goes on online in India. Noted cyber law expert Pavan Duggal feels that exercise of due diligence at their end, is a critical aspect for intermediaries in case they wish to limit vicarious liability to themselves. Google managers could be punished with imprisonment extending to life imprisonment and fines from 100,000 rupees ($1,500) to 1.0 million rupees ($ 15,000) and could also be asked to pay damages of up to 50 million rupees (nearly $ 750,000) per violation.

Objectionable content posted on Google and Facebook

The issue of jurisdiction over the internet was, once again, at the heart of the matter when the Indian Government sought to prosecute the high executives of companies like Google and Facebook for objectionable content posted online. India has started restricting internet freedom in recent years, raising concerns among free speech activists. In 2009, we amended our laws to hold internet firms liable for "offensive," "defamatory" or "blasphemous" content. These amendments to Section 79 of the Information Technology Act have since been challenged before the Hon'ble Supreme Court, but the court is yet to pronounce judgment in this matter. India needs to loosen these rules, regulations and political pressures or risk missing out on the internet revolution, feels Mishi Choudhary Executive Director of the New Delhi based Software Freedom Law Centre.[19]

On 06.02.2012, a Delhi court asked the Government to issue summons to more than ten internet service providers / content providers who have said that they are headquartered abroad. These included names like Facebook, YouTube and Yahoo. The executives of all these companies were ordered to appear in court on a later date and faced criminal charges. Google and Facebook appealed against the lower court's proceedings in the Delhi High Court. Internet companies have, all over the world, maintained that they cannot develop a method to monitor defamatory or obscene material that has been posted on their sites and can only act when the matter is brought to their notice. These companies feel that no human interference is possible, and moreover, it is not, and cannot be, feasible to check such incidents because billions of people from all over the globe post their articles on these websites. When these companies took the same stand before the Hon'ble High Court of Delhi, they met with an angry response from the Court, which went on to the extent of stating that, "....You just have a stringent check. Otherwise, like China, we may pass orders banning all such websites."[20] When these arguments were reported in the media, they were met with criticism that the Court was attempting to muzzle the media and this act of the Court was tantamount to assault on the freedom of the press, which is enshrined under Article 19 (1) (a)[21] of the Constitution and has been upheld by the Hon'ble Supreme Court in a catena of cases.

This case centred on a petition filed before a Metropolitan Magistrate in Delhi in December 2011 by a journalist named Vinay Rai, who referred to obscene depictions of Jesus Christ, Prophet Mohammed and various Hindu deities

on various websites, which could be accessed sitting anywhere in the world. In response, the Ld. Magistrate summoned the executives of 21 internet companies, who had been named in the petition and suggested that they stand trial for allegedly committing the offences punishable under Sections 292 (sale of obscene books etc), 293 (sale of obscene objects to young person etc) and 120-B (criminal conspiracy) of the Indian Penal Code. The magistrate had said, ".....It appears from a bare perusal of the documents that, *prima facie*, the accused in connivance with each other and other unknown persons are selling, publicly exhibiting and have put into circulation, obscene, lascivious content which also appears to the prurient interests and tends to deprave and corrupt the persons who are likely to read, see or hear the same...."[22] It is interesting to note that this order came only three days after another civil court in Delhi, had, in a civil case, restrained these very same websites including Facebook, Google and YouTube from webcasting any "anti-religious" or "anti-social" content promoting hatred or communal disharmony.

The Ld. Magistrate held that as per the records placed before the court by the complainant, there are defamatory and obscene articles pertaining to various Indian political leaders which are being broadcasted by these websites. "The contents are certainly disrespectful to the religious sentiments and faith and seem to be intended to outrage the feelings of religious people whether Hindu, Muslim or Christian. "There are certain degrading and obscene photographs of various political leaders belonging to different political parties and photographs pasted and the language used is also obscene, filthy and degrading," the court said.[23]

The complainant in the instant matter alleged that the content available on these websites was obscene and may lead to "creation of obscene books, pamphlets, papers which can easily be downloaded from these social networking websites affecting the minds of children and were harmful for social harmony and may lead to increase in crime against women also". The court also examined four witnesses during the hearing on Rai's complaint to ascertain the veracity of the materials produced as evidence and had earlier sought response from the Delhi police regarding the authenticity of documents filed by the complainant as the addresses of most of the respondents (website companies) were beyond its territorial jurisdiction, thus bringing into the open, the question of jurisdiction over cyberspace.

The counsels arguing on behalf of these companies, including Google Inc. and Facebook Inc, explained as to how their companies' products worked

before both the Metropolitan Magistrate and the Hon'ble Delhi High Court and maintained that they could not be held liable for third-party actions, i.e. those of internet users from all over the world, who posted and updated content on their websites. "The search engine only takes you to the website... Then it is between you and the website. The offending material has nothing to do with Google. Regardless of Google, that offensive material will remain there. We have no control over it," argued Google's lawyer, senior counsel, Neeraj Kishan Kaul, before Suresh Kait, J. in the Delhi High Court. Kaul went on to illustrate his case with examples - "If we were to use filters and block words like 'virgin' and 'sex' because someone finds them to be offensive, then many other genuine queries will also get blocked. Virgin Atlantic or references to genders of people will also get blocked". It was contended that the "casual manner" in which summons were served upon his client and others "reflected a complete lack of understanding of this technology (of the internet and how it worked)".

The question of jurisdiction over cyberspace came to the forefront when the Judge hearing the matter came in for scathing criticism from the counsels for the internet companies for summoning their US-based clients to Patiala House[24] in connection with the criminal complaint and this act of the Ld. Magistrate raised serious questions as to whether India was serious about the guarantees of freedom of speech and expression. The internet companies attributed "ulterior motives" to Rai's complaint against them and said there was "a complete non application of mind" in the Government (Department of Information Technology) issuing a sanction for prosecution against them.

During the course of the lengthy arguments before the Hon'ble Delhi High Court, which this author had the privilege of being a witness to, there was but one question from the judge, to which, the counsel for the internet companies did not have an answer: "What action have they (Google) taken (since the negotiations began with the government last September)?" This was with reference to discussion between the web-based companies and the Ministry of Information Technology between September and December, 2011. Another contention of Google India that their activities were restricted to mere advertising was questioned by the counsel for the complainant. Kaul had told the court that his client, Google India, did not operate the search engine or the blogging software, which was US-based Google Inc's domain. Using the memorandum of association, the complainants argued that since Google India was a fully owned subsidiary of Google Inc., it could be held

responsible for content-related issues as well. At around the same point of time, a senior official told the popular business newspaper, *Mint* that the Government of the day was capable of shutting down Google and Facebook within half an hour of receiving orders from a competent court. The official, who did not want to be identified, added that such a move would impose a blanket clampdown on all services provided by a web company as the Government's technology could not distinguish between various programmes that it offered such as chat services or social media.[25]

Critics like Praveen Dalal[26] maintain that companies like Google, Facebook, Microsoft, etc, have, for long, taken Indian laws for granted and the situation needs to change. It appears to Dalal and others who hold the same view that in doing so, these companies enjoy the overt and covert support of the Indian Government as the policies and regulatory framework of India are such that they allow these such companies to "Slip Easily".[27] For instance, the Information Technology Act prescribes certain due diligence that is to be performed by web-based companies which is not being done by these players.

Google's online defamation case is just the beginning, opines Dalal and the situation would change, sooner rather than later. He feels that action should be initiated against Google / G-mail as it is "...aiding and abetting the commission of various cyber crimes including objectionable content" against Indian citizens and organisations. India must put in place, proper legal and technical measures to regulate Indian Cyberspace if it really wishes to curb the menace created by both domestic and foreign technology companies. Google faces the problem of Conflict of Laws, which was referred to in earlier paragraphs of this Paper. While Google is adamant on following the laws and policies of the United States where it is headquartered, yet various stakeholders in India insist that Google must adhere to Indian laws as well, if it wishes to continue to operate in India.

A leading IPR law firm in India, Perry4law[28] feels that all subsidiary / joint ventures companies in India, especially those dealing in the arena of Information Technology, must mandatorily establish a server in India. Otherwise, such companies and their websites should not be allowed to operate in India. It has been reported that the Ministry of Home Affairs, Government of India and the Intelligence Bureau (IB) have been exploring this possibility in the wake of problems relating to jurisdiction over such websites / companies.

The possibility of young children being exploited through sexually explicit content posted on internet websites "worried" the Delhi High Court during the course of the hearing of a petition filed by former BJP ideologue K.N. Govindacharya seeking the recovery of taxes from these websites on their income from operations in India. A Division Bench comprising of B.D. Ahmed and Vibhu Bhakru, JJ. asked Facebook and Google to submit suggestions on safety measures for online usage of such sites by minors in India. The Bench voiced concern about Indian children entering into agreement(s) with Facebook and other social networking sites and then being lured knowingly and unknowing into illegality by adults. "....What we are worried about is children who have been part of the social network and some adults misleading them and taking advantage. We are also concerned about the use of their data by the adults for their advantage." The court's directions came after counsel for Facebook Inc submitted that their website operated under the United States' statute, namely, Children's Online Privacy Protection Act (COPPA) as per which a child below the age of thirteen years was not allowed to open an account. To this, the Bench said that in the United States, the rights of the children are protected by COPPA but what about the rights of children similarly placed in India? The court also expressed unhappiness over the Union of India's argument that one has to enter into an agreement with the website while opening an account which is not a contract, but a mere agreement to the terms and conditions. The government counsel had also submitted that there was no mechanism to verify the identity and age of a child seeking to open / access an online account.

Govind acharya, at present a patron of an organisation called the Rashtriya Swabhimaan Aandolan, had in a Public Interest Litigation (PIL) alleged that children below the age of eighteen years, are getting into an agreement with the social networking websites to open accounts, which was against the tenets of the Indian Majority Act, the Indian Contract Act and also the Information Technology Act. Due to non-verification of users, more than eight crore Facebook users across the world were found to be "fake", which the website admitted before U.S. authorities, the plea said. The petition also sought a direction to ensure safety of the data of 50 million Indian users, which was transferred "to the US and is being used for commercial gains in violation of the right to privacy." It contended that a writ of Mandamus should be issued against these organisations in order to "ensure verification of all existing users and future new members of social networking websites with instructions not to do agreements with children below eighteen years.[29]

The significant relationship test to determine jurisdiction

The relatively straightforward rules of yesteryears – namely *lex locus delectii* (the law of the place of the wrong) and *lex locus contractu* (the law of the place of the contract) have been superseded by a more nuanced, but certainly more indeterminate test of 'significant relationship' when it comes to determining the jurisdiction of activities that take place over the internet.[30] The celebrated case of *LICRA v. Yahoo!*[31] was decided by the High Court of Paris (*Tribunal de grande instance*) in the year 2000.[32] The case concerned the sale of memorabilia from the Nazi period by internet auction and the application of national laws of France to the internet. Some observers have claimed that the judgement creates a universal competence for French courts to decide internet cases. A related case before the United States courts concerning the enforcement of the French judgement reached the 9th US Circuit Court of Appeals, where a majority of the judges ruled to dismiss Yahoo!'s appeal. Criminal proceedings were brought in the French courts against Yahoo! Inc. and its then president Timothy Koogle; the defendants were however acquitted of all charges and this verdict was also upheld upon appeal.

International League against Racism and Anti-Semitism *(Ligue Internationale Contre le Racisme et l'Antisémitisme or "LICRA"* in French) petitioned a civil court in France that Yahoo! Inc. was allowing its online auction service to be used for the sale of memorabilia pertaining to the Nazi period, contrary to Article R645-1 of the French Criminal Code (*Code pénal*)[33]. These facts were not contested during the case. The defence rested on the fact that these auctions were conducted under the jurisdiction of the United States. It was claimed that there were no technical means to prevent French residents from participating in these auctions, at least without placing the company in a great deal of financial difficulty and compromising the very existence of the internet and the purposes for which it exists. The defendants contended that their servers were established on U.S. soil, their services were primarily aimed at U.S. residents and that the First Amendment to the United States Constitution guaranteed the freedom of speech and expression, and that any attempt to enforce a judgement in the United States would fail for unconstitutionality. As such, they contended that the French court was incompetent to hear the case.

An interim judgment was pronounced on 22.05.2000 and confirmed the illegal nature of the sale under French law. Experts were appointed to advise the

court as to what technical measures were required in order to prevent the repeat of an offence of this nature. The court ruled that there were sufficient links with France to give it full jurisdiction to hear the instant complaint since the auctions of Nazi memorabilia were open to bidders from any country, including France and that Yahoo! Inc. was aware that French residents used its auction site, as it displayed French-language advertisements on its pages when they were accessed from computers located in France. The court specifically dismissed the claim that the alleged problems of enforcing a judgment were sufficient to nullify its competence. Société Yahoo! France (the French subsidiary of Yahoo! Inc) was ordered to warn its users that they may be committing breach of French law if they followed links from its site to those operated by Yahoo! Inc. In turn, Yahoo! Inc. was directed to take all appropriate measures to deter and prevent access to auctions of Nazi memorabilia on its site by French residents. Yahoo! Inc. contended that it was impossible to comply with this order. The report of the court-appointed experts noted that, as of 2000, roughly 70% of French internet users could be identified as such by the use of domain-name databases. The court ruled that Yahoo! Inc. must comply with the original injunction within three months or face a fine of one hundred thousand (100,000) francs (15,244.90 EUR) per day.

On 10.01.2001 Yahoo! announced that it would not appeal against the ruling in France. It, instead, decided to take the case before the United States District Court for the Northern District of California in San Jose, asking it to find that the French ordinance is not effective in the United States. Judge Jeremy Fogel found the decision returned by the *tribunal de grande instance* of Paris to be inconsistent with the First Amendment to the Constitution of the United States, relating to freedom of expression, and held that consequently, the judgment was inapplicable in the United States. LICRA and UEJF appealed this decision before the United States Court of Appeals for 9th Circuit. The Ninth Circuit reversed the earlier holding, after finding that the District Court did not have personal jurisdiction over the appellants, namely LICRA and UEJF. The court quoted the following criteria for the establishment of personal jurisdiction as stated in an earlier Ninth Circuit case of *Bancroft & Masters, Inc. v. Augusta National Inc*[34].:

> Exercise of jurisdiction is consistent with these requirements of "minimum contacts" and "fair play and substantial justice" where (1) the non-resident defendant has purposefully directed his activities

> or consummated some transaction with the forum or a resident thereof, or performed some act by which he purposefully availed himself of the privileges of conducting activities in the forum, thereby invoking the benefits and protections of its laws; (2) the claim arises out of or relates to the defendant's forum-related activities; and (3) the exercise of jurisdiction is reasonable.
>
> .....
>
> ..... we determined [*in Bancroft*] that the express aiming requirement is satisfied when the defendant is alleged to have engaged in wrongful conduct targeted at a plaintiff whom the defendant knows to be a resident of the forum state.

The majority then concluded that Yahoo! makes no allegation that could lead a court to conclude that there was anything wrongful in the organizations' conduct. As a result, the District Court did not properly exercise personal jurisdiction over LICRA and UEJF. There was one dissenting opinion, written by Judge Melvin Brunetti, who argued that "a defendant's intentional targeting of his actions at the plaintiff in the forum state", which he viewed the French charges and fines as constituting, sufficed to give jurisdiction to the forum state, the United States, under the Supreme Court's "express aiming" precedent.

This decision and its reporting in national and international media, sparked a backlash of controversy within the United States, where many saw it as the censoring of a United States publication by a foreign power. Although technically the decision only required Yahoo! to prevent the sale of Nazi objects to people in France, Yahoo! has since chosen to remove the sale of Nazi memorabilia from its site entirely. Judge Gomez, the French judge in the Yahoo! Case has been quoted as saying that:

> For me, the issue was never whether this was an American site, whether or not Yahoo! had a subsidiary in France, the only issue was as to whether the image was visible in France. ·It is true that the internet creates virtual images, but to the extent that the images are available in France, a French judge has jurisdiction for harm caused in France or violations of French law. In the case of my decision, it was extremely simple: the Nazi collectibles were visible in France, this was a violation of French law and therefore, I had no choice but to decide on the face of the issue. Whether the site

> is all in English or not makes no difference. The issue of visibility in a given country is the only relevant issue. Even if the image is virtual, if it is accessible on a computer monitor in France, a French judge has jurisdiction to intervene if the image violates French law. The issue is strictly a geographic one. Even an American in France violates French law by consulting a site prohibited by French law.[35]

Conclusion

From a perusal of the discussion in this Paper, we can see that in a networked world, where all points are equidistant from all others and are accessible from any computer anywhere in the world, the principles of international law and the international legal system alone, would not be sufficient to impose obligations upon everyone to comply with all the law. Governments across the world derive their just power to govern from the consent of those governed and this must also hold true in the case of cyberspace. This problem of jurisdiction over what happens on the internet and in cyberspace, needs careful insight and thought by cyber law experts, practitioners, academicians and thinkers all over the world and that the problem is far too immense to be left to Governments and policy makers alone.

1 Professor of Mathematics, Massachusetts Institute of Technology.

2 John Perry Barlow, "Declaring independence", p 23, *Wired, Vol 4, 1996.*

3 Lance Strate, "The varieties of cyberspace: Problems in definition and delimitation", p. 382, *Western Journal of Communications, Volume 63, Issue 3, 1999.*

4 Chip Morningstar and F. Randall Farmer, "The Lessons of Lucasfilm's Habitat", pp. 664-667, *The New Media Reader, MIT Press, 2003.*

5 *American Civil Liberties Union v. Reno*, 929 F. Supp. 824 (E.D. Pa. 1996), *aff'd*, 521 U.S. 844 (1997).

6 Black's Law Dictionary (9th Ed, 2009).

7 Oliver Wendell Holmes, Jr., "The Path of the Law", *10 Harvard Law Review 457 (1897).*

8 *A & M Records, Inc. v. Napster, Inc*, 239 F.3d 1004 (9th Cir. 2001), *aff'd*, 114 F.Supp. 2d 896 (N.D. Cal. 2000).

9 Pub. L. No. 105-304, 112 Stat. 2860 (1998). The Digital Millennium Copyright Act (DMCA) was signed into law by President Clinton on October 28, 1998. The legislation implements two 1996 World Intellectual Property Organization (WIPO) treaties: the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty. The DMCA also addresses a number of other significant copyright-related issues.

10 Pub. L. No. 102-563, 106 Stat. 4237. The Audio Home Recording Act of 1992 (AHRA) amended the United States copyright law by adding Chapter 10, "Digital Audio Recording Devices and Media". The Act enabled the release of recordable digital formats such as Sony and Philips' Digital Audio Tape without fear of contributory infringement lawsuits.

11 239 F.3d at 1015.

12 *Id.*

13 American Declaration of Independence – Modern translation 2012. Available at http://www.sparknotes.com/history/american/declaration/summary.html.

14 465 U.S. 783 (1984).

15 Criminal Petition No. 7207 of 2009 decided by the Andhra Pradesh High Court on 19.04.2011.

16 Former Union Minister for Labour and Textiles.

17 President, Indian National Congress and the then Chairman of the National Advisory Council (NAC).

18 Deals with the liability of intermediaries in the case of cyber offences.

19 *Supra* Note 17.

20 *The Indian Express*, New Delhi, June 21, 2013.

21 Protection of certain rights regarding freedom of speech etc:

(1) All citizens shall have the right

(a) to freedom of speech and expression;

22 Order sheet dated 06.02.2012 of the Court of Shri Sudesh Kumar, Ld. Metropolitan Magistrate, Delhi.

23 *Id.*

24 District Court complex in the State of Delhi where cases pertaining to New Delhi district are taken up for adjudication

25 Google, Facebook defend services in Delhi high court, Nikhil Kanekal & Sahil Makkar http://webcache.googleusercontent.com/search?q=cache:http://budget.livemint.com/Industry/Fb9AVKUzgWX6Usy26qbq9L/Google-Facebook-defend-services-in-Delhi-high-court.html.

26 Advocate, Arbitrator and Consultant, practicing at Delhi High Court and Supreme Court of India and a techno-legal Information Technology, IPR and Cyber Security Specialist handling several sensitive cases.

27 http://perry4law.org/clic/?p=114

28 http://perry4law.com/index1.htm

29 *The Indian Express*, New Delhi, May 23, 2013.

30 David G. Post, "What Larry Doesn't Get: Code, Law, and Liberty in Cyberspace", *52 Stanford Law Review 1439 (2000).* A review of Larry Lessig's book *Code and Other Laws of Cyberspace.*

31 No RG: 00/0538, *Tribunal de grande instance* (T.G.I.) (ordinary court of original jurisdiction) Paris.

[32] Mark Greenberg, "A Return to Lilliput: The LICRA v. Yahoo! Case and the Regulation of Online Content in the World Market", *18 Berkeley Tech. L.J. 1223.*

[33] Article R645-1 of the French Criminal Code prohibits to "wear or exhibit" in public uniforms, insignias and emblems which "recall those used" by an organisation declared illegal in application of Art. 9 of the Nuremberg Statute, or by a person found guilty of crimes against humanity as defined by Arts. L211-1 to L212-3 or by the Law No. 64-1326 of 1964-12-26.

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Experiences of Discrimination within Educational Institutions : A Review

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Abstract

Discrimination is a construct which is very popular and a lot of researches have been conducted in different disciplines on this area depicting its different nature, kinds, and aspects. But very few studies have been done to gauge its nature and effects in educational institutions and above all to study the experiences of discrimination against students. The present paper gives a glimpse about the studies done to find out experiences of discrimination against students. It also gives answer to questions like which section of the student is prone to discrimination? Who are the people doing discrimination in schools and what are the mediating variables?

Key Words : Educational Institutions, Students Discrimination, Nature and Effects.

Recent studies on discriminatory experience faced or perceived by students are reviewed in order to understand themes, existing theories, trends and knowledge gap in the area of experiences of discrimination faced by students in their school environment. These studies are as arranged chronologically in ascending order.

Wong, Eccles and Sameroff (2003) studied following problems: Do experiences with racial discrimination at school predict changes in African-American adolescents' academic and psychological functioning? Does African-American ethnic identity buffer these relations? This paper addresses these two questions using two waves of data from a longitudinal study of an

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economically diverse sample of African-American adolescents living in and near a major East Coast metropolis. The data were collected at the beginning of the 7th grade and after the completion of the 8th grade. As expected, experiences of racial discrimination at school from one's teachers and peers predicts to declines in grades, academic ability self concepts, academic task values, mental health (increases in depression and anger, decreases in self-esteem and psychological resiliency), and increases in the proportion of one's friends who are not interested in school and problem behaviours. A strong, positive connection to one's ethnic group (our measure of ethnic identity) reduced the magnitude of the association of racial discrimination experiences with declines in academic self-concepts, school achievement, and perception of friends' positive characteristics, as well as the association of the racial discrimination experiences with increases in problem behaviours.

Another study conducted by Hoff and Panday (2004) examines experimental evidence to test whether history shapes people's belief systems and individuals' response to opportunities despite the fact that legal barrier to economic and social advancement by oppressed groups having been abolished. They find that there is no caste difference in the performance of students when caste is not publically revealed; however when caste is made salient a large and robust caste gap in performance of the students emerges. In addition to this they find that introduction of a non-human reward factor (i.e. no subjective judgement and the link between performance and reward is mechanical e.g. a random draw) makes the caste gap disappear demonstrating that students anticipate that their caste will result in their efforts being poorly rewarded. In the same year a study by Verkuytenand Thijs (2004) States that ethnic minority group adolescents' experiences with discrimination and prejudice in school settings are thought to lead to a defensive detachment of the self from the school domain. That is, these adolescents may disengage their self-feelings from their academic performances causing the academic self to become a less important part of global self-worth. They claim that there is limited empirical evidence for this assumption and the existing research is on African American students. Hence they devised a study to examine among ethnic minority adolescents in the Netherlands the hypothesis that under conditions of perceived discrimination minority group members tend to psychologically disengage their self-feelings from educational performance. Study 1 was conducted among 161 Turkish students between 13 and 16 years of age. The sample in Study 2 consisted of 112 Turkish participants of 11 and 12 years of age. Two questionnaire studies were conducted and participants responded to questions on perceived

academic performance, academic self-esteem, global self-worth and perceived discrimination in school. In both studies, academic self-esteem mediated the relationship between perceived educational performance and feelings of global self-worth. More importantly, perceived discrimination in school moderated the relationship between academic self-esteem and global self-worth. Discrimination did not moderate the relationship between academic performance and academic self-esteem. The results indicate that for ethnic minorities perceived discrimination in school can lead to psychological disidentification from the academic domain whereby global self-worth is less based on performances and competencies in the academic domain.

A longitudinal study guided by the academic resilience perspective, examined whether academic motivation mediated the relation between Latino adolescents' (N=221) experiences with discrimination and their academic success. In this study done by Alfaro et. al. (2009) the potential moderating role of gender was also examined. Using multiple group analysis in structural equation modeling, findings indicated that perceived discrimination at Wave 2 significantly predicted academic motivation at Waves 2 and 3 for boys but not girls. Additionally, for boys, academic motivation significantly mediated the relation between perceived discrimination and academic success. Findings underscore the importance of considering the long-term implications of discrimination for Latino boys' academic success. Furthermore, findings encourage moving beyond the examination of gender differences in specific academic outcomes (e.g., academic success) and focusing on how the processes leading to academic success vary by gender.

Two more studies were found that were done in Indian setting one by foreign origin and another by an Indian based NGO devoted for the upliftment of vulnerable section of the society. First study done by Hanna and Linden (2009) finds that when making exam papers, teachers give those answers assigned to be of lower caste students, lower scores than similar answers that are assigned to be of higher caste students. Interestingly and contrary to previous literature that finds individual discriminate in favour of members of their own group, they find that discrimination against the lower castes is mainly driven by lower caste teachers, while teachers who belong to higher castes do not appear to discriminate at all. Another study done by the NGO Navsarjan (2009) questioned 805 scheduled caste children from 101 villages of 37 talukas in 9 Districts of Gujarat. The study was to understand discrimination against Scheduled caste children in their schools. The major aspects with regard to Dalit girls that came out during the same are as below:

A. Complaints/Grievances of SC children against their Non Dalit Teachers in the School

Type of Complaints/Grievances	No. of Complainant SC Children (out of 805)	Percentage %
We are not promoted as Monitors	408	50.68
We are not given motivation to participate in extra-curricular activities	356	44.22
They never put hands on our shoulders	329	40.86
They do not repeat again if we do not understand	273	33.91
They never visit our homes	641	79.62
We are not allowed to participate in the extra-curricular activities	183	22.73

B. Complaints/Grievances against other (non SC) students in the school

Type of Complaints/Grievances	No. of Complainant SC Children (Out of 805)	Percentage %
They do not sit with us in the mid day meal	319	39.62
They abuse us with caste based derogatory words	429	53.29
They talk to us in humiliating language	364	45.21
They give us bad words	281	34.90
They do not behave with us in friendly manner	367	45.59
They beat us	208	25.83

C. Complaints/Grievances put forward by the parents of the SC Children (The female parent showed more eagerness for the same than the male parent).

Type of Complaints/Grievances	No.of Parents (out of 705)
1. Untouchability: Non SC students practice untouchability.	185
If we complain then enmity increases in the village.	151
The teachers do not pay attention to our complaint.	104
2. Humiliation.	123
• Many times our child comes crying if s/he is humiliated in the class.	129
• Due to continuous humiliation our child/ren does not wish to go to school.	
3. Problem with incentives.	374
• Our children do not get regular scholarships.	
4. Economic problem.	386
• We want to educate our children but are not economically capable.	340
• We do not have enough money for books and uniform.	
5. Fear.	253
• We are concerned about the security of our school going daughters.	

Another study done in the field of discrimination in school revealed the relationships between prospective classroom teachers' discriminatory attitudes, and some socio-demographic variables. The sample of the study consists of 840 first- and fourth-year students, attending Classroom Teaching Departments in some colleges of education, in Turkey conducted by Akar-VuralandGomlesiz (2010).This study utilizes a descriptive survey method. The study is said to be a cross-sectional sampling, in terms of the comparison of first and fourth grade students. Two types of data collection tools were used: A Discrimination Attitudes Scale (DAS), consisting of four sections, and A Student Personal Profile Form. The findings show that female students had lower discriminatory attitudes, when compared with male students. Additionally, similarities existed between the first and fourth year students' discriminatory attitudes, although

these attitudes tended to decrease towards the last (i.e., fourth) year. It was also observed that the education level of the mother was influential in the attitudes, and that discriminatory attitudes tended to decline from villages to cities.

Jain and Narayan (2010) stated that they addressed the challenges of designing performance- based incentive schemes for schoolteachers. When teacher specialize in different school subjects in the presence of social prejudice, performance based pay which depends on average of student performance can cause teachers to coordinate effort in high status students and away from low status students. Laboratory experiments conducted in india with future teachers as subject show that performance based pay cause teachers to decreased efforts in low caste hindu students compared to high caste hindu or muslim students. We observe greater effort and lower intra-class variation when teachers are penalized if students receive zero scores. The scenario of Chinese higher education is also not different a study in that setting found that gender is still a significant issue, as is a general ignorance of gender discrimination against women. Liu and Li (2010) also stated that issues related to gender can be observed throughout the process of education: at the time of entering an institution, during the educational process and as an outcome of education.

Another study again on Latin and Maxicon students by Benner and Graham (2011) examined Changes in perceptions of discrimination with 668 Latino students (62% Mexican American; 56% female; M_{age} = 14.6 years). Adolescents' reports of discrimination increased across the first 2 years of high school. Perceptions of discrimination were higher for boys and for primary language brokers, as well as for adolescents in schools with more ethnically diverse student bodies but a less diverse teaching staff. Path analysis revealed that higher levels of discrimination and increases in discrimination across time influenced Latino adolescents' academic outcomes (i.e., grades, absences) indirectly via their influences on perceptions of school climate. Findings highlight previously understudied individual and school contextual factors that shape experiences of discrimination and the mechanisms by which discrimination indirectly influences Latino adolescents' outcomes.

In the same line Villar (2011) explored the experiences of victimization and immigration among immigrant youth in the Peel region in Ontario, Canada. Victimization included the experiences of bullying and ethnic discrimination in the school environment. The study utilized a phenomenological approach to

investigate how immigrant youth interpreted their experiences and whether they identified victimization as bullying, ethnic discrimination or both. The effects of victimization on adaptation and acculturation were also explored. Results from individual interviews of six youth (ages 16 or 17) indicated that immigrant youth viewed bullying and discrimination as separate constructs. Themes that emerged from the interviews included the importance of language proficiency; the role of peer affiliations; and factors associated with resiliency. It was evident through their descriptions that immigrant youth face unique challenges, which include adjusting to a new culture and country of residence, establishing a new social circle, and gaining comfort in utilizing the English language.

There are few studies conducted in the year 2012.First by Aroian (2012) who stated that although there is ample evidence of discrimination toward Muslim Americans in general, there is limited information specific to Muslim American adolescents. The few existing studies specific to this age group suggest that Muslim American adolescents encounter much discrimination from teachers, school administrators, and classmates. This descriptive qualitative study complements the few existing studies on Muslim American adolescents by obtaining in-depth description of the discrimination they encounter. The sample was 14 Muslim American adolescents who participated in one of two gender-specific focus groups about their discrimination experiences. Findings identified school settings as rife with discrimination toward Muslims, portrayed Muslim girls as at risk for harassment by strangers in public places, and illustrated how Muslim youth cope with discrimination. The study findings sensitize school nurses to the nature of the problem and provide direction for intervention.

The second study conducted by Ayres & Leaper (2012) the researcher examined (a) girls' responses to personal experiences of gender and/or ethnic/racial discrimination, (b) social support from parents and friends following the discrimination, and (c) the relationship between girls' reported coping strategies to the discrimination and their self-esteem. Participants were 74 adolescent girls ($M = 16.3$ years) from diverse ethnic backgrounds in California. Each girl completed an online survey that included open-ended questions about a personal experience of discrimination and self-reported coping strategies, as well as a questionnaire measure of self-esteem. Results indicate that girls' reported coping strategies were varied. Avoidance strategies such as ignoring the situation were most common, but many girls also reported use of approach strategies such as confronting the discrimination. Social support from family and friends was related to self-esteem. The study highlights ways in which

family and friends may help or hinder girls as they cope with different kinds of discrimination. The research examined (a) girls' responses to personal experiences of gender and/or ethnic/racial discrimination, (b) social support from parents and friends following the discrimination, and (c) the relationship between girls' reported coping strategies to the discrimination and their self-esteem. Participants were 74 adolescent girls ($M = 16.3$ years) from diverse ethnic backgrounds in California. Each girl completed an online survey that included open-ended questions about a personal experience of discrimination and self-reported coping strategies, as well as a questionnaire measure of self-esteem. Results indicate that girls' reported coping strategies were varied. Avoidance strategies such as ignoring the situation were most common, but many girls also reported use of approach strategies such as confronting the discrimination. Social support from family and friends was related to self-esteem. The study highlights ways in which family and friends may help or hinder girls as they cope with different kinds of discrimination.

Third study was conducted by Basant (2012) and in his paper he reviewed the available evidence on the patterns of Muslim participation in education and employment. He compared the estimates derived from the most recent round of the National Sample Survey for the year 2009-2010 with the earlier years (1999-2000 and 2004-05), an effort is made to assess if these patterns have changed in recent years. A preliminary analysis of the correlates of these patterns suggests that these are quite complex and multi-dimensional. Perceptions about discrimination interact with endowments, opportunities, supply side conditions and attitudes to give rise to different patterns of participation in employment and education.

The last study included is done by Hardie & Tyson (2012) and they in their article used data drawn from nine months of fieldwork and student, teacher, and administrator interviews at a southern high school to analyze school racial conflict and the construction of racism. They found that institutional inequalities that stratify students by race and class are routinely ignored by school actors who, they argue, use the presence of so-called redneck students to plausibly deny racism while furthering the standard definition of racism as blatant prejudice and an individual trait. The historical prominence of rednecks as a southern cultural identity augments these claims, leading to an implicit division of school actors into friendly/nonracist and unfriendly/racist and allowing school actors to set boundaries on the meaning of racism. Researchers also states that these rhetorical practices and the institutional structures they mask

contributed to racial tensions, culminating in a race riot during our time at the school.

Conclusions

The studies discussed above are from different parts of the world like America, Australia, China, Neitherlands, California, Canada and India etc. Review shows that the problem of discrimination in schools is studied through quantitative, qualitative and mixed method approach, but descriptive survey method is adopted in majority of the researches. It is clear from the literature that perceiving and experiencing discrimination is a worldwide phenomenon. And the most vulnerable sections of society facing discrimination are Ethnic minorities, Religious minorities, Low Class and Status children, and Low Caste children. Among these groups it appears that girls are easy target.

Review also suggests that these vulnerable sections of students in school who perceive and experience discrimination considers teachers, school administrators, peers and classmates to be the source of discriminatory behavior done to them.

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Colonal Historiography in Arunachal Pradesh : Revisting Chronology

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Abstract

Arunachal Pradesh, NEFA in the colonial period, was terra incognita since not known outside till India's independence due to want of any authentic record. The British historians, administrators, anthropologists, geographers and scholars during the colonial period started writing on Arunachal despite volumes of constraints they faced. Constraints never deterred documents to appear in volumes entailing the state and its knowhow. A good number of archival documents in the form of Reports, Accounts, Journals and Monographs started appearing since 1791. Though the colonial rule never attempted to prepare an account of the different tribes of the Frontier region, efforts were made from 1881 onwards to include ethnography on the Frontier tribes in the Census of India Reports. Despite being criticised for accepting the facts and figures of their records with an eye in the independent era, they are considered as the basic sources of historiography for carrying out interdisciplinary research on the heterogeneous tribal societies of the state.

The attempts made during the colonial period ask the scholars to retrospect on the issue as to how such mission could be undertaken in such a difficult time which ended up with such archival records to come up. It is against such a backdrop that the present paper has been conceived. Sources, both primary and secondary have been consulted to give the paper the look it is.

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Key words : Colonial Historiography, Ethnography, Frontier tribes, Arunachal Pradesh

I. Introduction

Writing of history through the test of time has been proved a significant and uphill task for the historians. Conceptualization of an issue to be included within the parameter of history for its balance presentation before the readers, setting bias and prejudices aside and its relevance to social realities upfront, seems as herculean an attempt as writing a research paper in the recent days with several methodologies easily acceded. The progress of human knowledge and the methodology of the sciences have recast the change in the methods of enquiry used by historians and asked the scholars to admire the 'precision and sophistication of the methods used by the historians' (Toploski, 1976: 1). This was not the case with the trends of historiography of the nineteenth century or prior to that. In eighteenth century, history had outgrown the peculiarities of the Classical and the Middle Ages, and a philosophy of history began to develop. The twentieth century started experiencing the metaphysical and positivist historiography with deeper thrust on scientific cognition.

The historiography developed in the nineteenth and twentieth centuries bears the concurrence of positivism. The various historiographical schools developed in the modern world have to a greater or lesser extent kept within the major tenets of positivism, either the liberal version or the Marxist version (Sharma, 1993: 371). The liberal positivists have more or less accepted the fact-value dichotomy. Whether it is history written by the Rankeans or the Universalists, or those of the Annals tradition of Marc Bloch or even the Namierites, none of these trends has been able to break loose from the liberal positivist hangover. True that many historians like Herbert Spencer, John Stuart Mill, Toynbee or Marc Bloch were aware of one major drawback of the positivist historiography – that this historiography was acting as a break on explanations and that it made no attempt to link facts with change. But in trying to overcome this, historians either gave interpretations which were speculative, or criticized positivism with no better solutions coming forth.

II. Colonial Historiography

India has the experience of gaining abreast a good number of historical materials from 1757 to 1947 (Ali, 1981: 331). The fact that a commercial company of London established its political supremacy over vast areas, in a

region thousands of miles away from its seat of power necessitated a kind of administration which involved the mechanism of lot of paper-works. Every policy had to be written down, every opinion expressed in minutes and every business of the state transacted through dispatches, consultation and proceedings, and through secret letters and secret correspondence, resulting in the growth of an inconceivable volume of historical material. But the fact remains that it was but colonialism with all its forms of knowledge which was to appear as archival records.

The British associated themselves with India as a mission under European colonialism. European colonialism is construed as a political-economic phenomenon whereby various European nations explored, conquered, settled and exploited large areas of the world. Discovering and developing trade nexus with little explored Asian hemisphere succeeded the event of commercial revolution taking place in Europe. Great Britain in India like other European colonial powers which was never assimilated in the mainstream of Indian life was superimposed to serve its own interest many a time adopting very effective strategies and policies too. It was a period of continuous warfare first for the Company's survival and then for supremacy and expansion. When the British Government assumed full power in 1858 for the governance of India, this country became a pawn in the hands of imperialists who used it for their own purpose of world domination. The Indian response to such a situation has offered students of history a kind of material which is baggy in size, highly complex in nature and very informatively revealing.

Imperialist historians of the colonial period dealt with precision ancient Indian history and culture. Later on, medieval period was brought under their review. The monumental work edited by Henry Elliot in eight volumes, *History of India as told by its own Historians* (1867-1877) was a classic compilation. Robert Orme's Military-Historical Accounts (1763- 1778), James Tod's *Travels in Western India* (1839), Joseph Cunningham's *History of the Sikhs* (1849), and Grant Duff's *History of the Mahrattas* (1826) left a trail that came to be blazed by nationalist historians like G. S. Sardesai and Sir Jadunath Sarkar in the respective fields of Maratha and Mughal studies.

James Mill was to pioneer the British historiography of modern India. His *History of British India* (1817) came to be hailed as the greatest historical work. The *Imperial Gazetteer of India* (14 volumes) (1881-1887) and

Rulers of India Series (28 volumes) (1889-1892) not only depict an intellectual honesty but a thorough versatility not unbecoming of a British bureaucrat and a statistician. Vincent A. Smith's *The Oxford History of India* (1923), *Catalogue of Coins of India* (1906), and his monumental works on *Asoka* (1909-1920) and *Akbar* (1917-1919) speak of him as an illustrious historian contributing strength to Indian historiography. The Historical Essays by Lord Macaulay (1843) and the Economic Historiography from Akbar to Aurangzeb by W.H. Moreland (1923) are not out of place to be specially mentioned contextually here.

It is under this background that the colonial historiography is to be assessed, valued, revalued and put to test. Mention may be made, Arunachal Pradesh, then NEFA was never forming a part of the British administration like that of its neighbouring state Assam where the Ahoms could be replaced by the British in 1826 after the Treaty of Yandaboo and which could be placed under the British hegemony by 1838 (of course, the process of annexation had already started in 1828 whereby Lower Assam could be annexed permanently on the advice of David Scott, the Senior Commissioner of Western Assam and Upper Assam in 1838) whereby they made it a Non-Regulation Province of British India (Singh, 1985: 11).

III. Scope of Historiographical Research in the erstwhile NEFT

The present state of Arunachal Pradesh was known during colonial period as North East Frontier Tract (NEFT) in 1912 and before that the northern frontiers of Assam. To conduct historical research in the erstwhile NEFT is very difficult since materials, written or unwritten, relating to its history other than some oral literature and historical ruins lying in the foot hills of the territory are practically not available. Initially upto 1865, the scholars knew of only three ruins namely, Bhalukpong in the West Kameng District and Tamreswari temple and Bhismaknagar in the Lohit District. But subsequent explorations and excavations brought to limelight a good number of other such ruins dating approximately from the early Christian era (Chakravarty, 1995: Preface). Hence, as seen, there is a dearth of historical materials for the construction of the socio-political history of the state (Biswas, 1992: 54). Apart from working on legends, folklores and traditional accounts as available with us these days, a lot more is to be explored to overcome constraints in research methodology.

Arunachal Pradesh in the colonial period (the erstwhile NEFT in 1912 and

NEFA in 1954) was a closed land in the sense that journey across the Inner Line was not allowed. There were the encounters of interventions of the British and Tibetan state through trade, posa and kotokies. Even now a person other than an Arunachalee who wants to enter the state in any capacity has to obtain an Inner Line Pass, issued temporarily from the competent authority. Such passes were also issued during the British regime; but generally, except for Europeans the land remained virtually hidden behind an iron curtain, and all sorts of stories unattested by sources were associated with the life and culture of the tribes living within it. In the nineteenth century, as also in the early twentieth, a thorough study of the culture of the Indian people was undertaken by nationalist scholars and the past was glorified. But the frontiers still remained insular. The state remained out of the stream of India's national development (Bose, 1979: vii).

The attempt of the British ethnographers, administrators, anthropologists, geographers and scholars during the colonial period to write on the tribes, geography and environment of present day Arunachal, despite constraints of availability of source materials and topographical hazards is beyond doubt outstanding, if tested through a balance parameter of research. A critic's eye harped on such materials question often the authenticity of attempt to go for writing such documents. Colonial interests of course went a long way to support them behind. But carrying an orientation towards writing and focusing on publishing and documenting something to be bequeathed for posterity on the state during the colonial period asks the scholars to retrospect on the issue. This kind of attempt was not found to be new, since such orientation happened with chronicles written by the medieval state. Still their volumes of attempts need an introspection of appreciation rather than criticism. It is against such a backdrop that the present paper has been conceived. Sources, both primary and secondary have been consulted to give the paper the look it is.

Quite apropos, Arunachal Pradesh was not like other states of mainland India upto the early years of India's independence. Probably this was the reason why Prof A.C. Talukdar goes to write, "Politically and culturally the state was still in her ancient character upto the early years of India's independence" (Talukdar, 1998: 222). It is difficult to trace out the relations of the Arunachal tribes with the outside world prior to the sixteenth century AD due to want of any authentic record. Tough topography though constituted a determinant factor of the then Arunachal geography never did prevent

migrations or movements of trade and raids. One of the key factors which facilitated these relations to continue was the lack of some of the daily necessities of life in this area, such as salt, iron and clothes etc. (Nayak, 2007: 52). To meet these requirements they had to depend on the plains. Hence they frequently raided the plains and obtained these articles by force. Even the Ahom state used to procure these goods from Tibet. It was the reason why the Ahom ruler Pratap Singha (1603-1641) introduced the 'Posa' system (Jha, 1996: 446-458) as means of compensation to the tribes to protect the subjects of the plains from their raids.

The British developed their relations with Arunachal Pradesh in different phases. In the Western side, while they started developing relations with the Akas as early as 1825, with the Shertukpens as early as 1836 and the Bhutias as early as 1838; in the Central region, their relations began with the Adis as early as 1825, with the Nyishis as early as 1835 and with the Apatanis as early as 1895 and in the Eastern side, they had their relations with Mishmis and Singphos as early as 1825 and with the Khamptis as early as 1830 (Pandey and Tripathy, 1997: 258-299; Bose, 1979: 48-85; Singh C., 1989: 32-58).

At the time of independence Arunachal Pradesh consisted of three artificially created administrative units, namely, the Balipara Frontier Tract, the Sadiya Frontier Tract, and the Tirap Frontier Tract. All these had already come into existence because of the Inner Line Act of 1872, the Scheduled Districts Act of 1873 and Assam Frontier Regulation of 1880 introduced by the British. They also introduced the Forward Policy in 1912-13. All these areas were loosely administered by the British before Independence as '*Excluded Areas*' under the provision of the Government of India Act, 1935. Each one of them was inhabited by a number of tribes or tribal groups having nothing in common except geographical proximity and ethnic similarity. Even though the British were not in touch with the tribes residing in these areas they had considered the areas too backward and unrewarding for extending any civil administration, except that for bifurcating the Sadiya Frontier into two districts of the Abor Hills and the Mishmi Hills in 1948 (Talukdar, 1998: 221). Despite the state being assessed unrewarding for the British, rewarding was their noble attempt to generate some amount of literature in the then period which rolls into the fold of historiography now. Let us now bring about a review of the same which largely covers the area of the paper under discussion.

IV. Reports, Accounts and Journals

With the advent of the British a new trend was set in history-writing. Most of the English writers were not professional historians; but basically administrators or military officers. Their knowledge on North East and its people helped them compile a number of historical works. The beginning was made by J. P. Wade accompanying Captain Welsh to Assam in 1792 as a doctor who compiled his translated version of Assamese Buranjis titled *An Account of Assam* together with a graphic geographical account captioned *A Geographical Sketch of Assam.*

Another very redeeming feature of nineteenth century historiography was the publication of scores of books and accounts on the frontier tribes. The students of tribal history today recall with gratitude the contributions made by some European officers towards advancement of historical studies. Their intimate knowledge of the tribal customs and institutions and their exploratory habits always placed them on a more advantageous position than the native writers. The result was the production of some highly informative narratives on almost all the major tribes of North East India (Goswami, 1993: 357). Arunachal stood no exception to it. T.T. Cooper's *The Mishmi Hills* (1873) and C. R. Macgregor's *Military Report on the Khamti - Singphoe Country* (1887) bear the testimony to the statement made above.

The foundation of the Historical Institute '*The Asiatic Society of Bengal*' in 1784 by Sir William Jones and the '*Journals of the Asiatic Society of Bengal*' further promoted the research into topography, history and culture of the North Eastern Hill Tribes. Apart from official records, the Reports on the Military Expeditions of the British officers against these tribes and the individual accounts kept by them on their publications formed the first stage in the direction of writing about the society and culture of the hill people of North East India.

The earliest references on a tribe of Arunachal opening a window to colonial historiography can be traced back to 1791, i.e. on Daflas (presently known Nyishis) when the second volume of the *Asiatic Researches* of the Asiatic Society featured a translated article entitled *A Description of Assam* by Henry Vansittart (Sangma, 1994: 3). Its sixteenth volume published in 1828 also included John Bryan Neufville's *Geography and Population of Assam*, an article referring the Abors (Adis), Miris and Mishmis as experts in bows and arrows containing poison on the tips. The 'Journal of the Asiatic Society

of Bengal' published since 1840, through its several issues, made numerous mentions on the life and civilization of the people of the North East India.

A number of agreements executed by the British Raj with the chiefs and representatives of different tribal communities at different points of time, i.e. with the Singphos (Aitchison, 1973: 119-120 & 142-143) (presently in Changlang and Lohit districts) in 1826; Khamptis (Aitchison, 1973: 148) (Tirap) in 1843; Shertukpens (Aitchison, 1973: 150-151) (West Kameng) in 1844; Akas (Aitchison, 1973: 164-165) (West Kameng) in 1844 and 1888; and the Adis (Aitchison, 1973: 156-162) (East, West and Upper Siang) between 1862 to 1866, legitimizing the former's political control over the latter prove today an asset of historiography. It is also attested by some of the primary source papers generated during the colonial rule (Selection of Papers, 1973). "The Khamptis represent", as R. B. Pemberton writes, "the Shan culture of upper Burma. They migrated to their present place of Arunachal from their original home which was near the sources of the Irrawadi River. They follow the Buddhist religion" (Pemberton, 1835: 70). According to him, "The Singphos who drove away the Khamptis from the lands below the Patkai Hills and settled themselves on the bank of the Tengapani river were the most humorous tribes bordering on Assam valley" (Robinson, 1841: 373).

S.F. Hannay puts the identity of the Singphos as a section of the Tesan group of the Burmese Kachin (Kachin and Shan or Kakhyen tribes of Burma are put into five groups- Tesan, Mirip, Lophae, Lotong and Myurung by Hannay) (Hannay, 1847: 7) who had migrated to Assam and occupied the western part of the Patkai Range.

We also find different historiographical narratives originating from the British administrator-scholars during the colonial period on a very important politically and historically relevant issue, i.e. the *Posa* System which stands still in vogue so far its customary spirit is concerned. *Posa* is defined officially as allowances paid to certain hill tribes inhabiting the hills on the northern frontier of Assam bordering Darrang and Lakhimpur, on account of commuted 'blackmail', or in consideration of the abandonment by them of their claims with regards to certain *duars* (Chakravarty, 1995: 122). H. J. Peet, Deputy Commissioner of Lakhimpur, in his Letter No. 641G dated 05.8.1882 stated: "The word *Posa* literally means a collection of subscription for a common purpose- the word is well-understood in this sense in Upper Assam" (Chakravarty, 1995: 122). W. Robinson, Inspector of Government Schools

in Assam also corroborates facts about *Posa*. He informs, "During the latter days of Ahom suzerainty when dissensions, and the growing imbecility of the Government furnished opportunities for the bordering tribes to indulge in acts of rapine and lawless aggression on their low land neighbours, the Daphlas (now known Nyishis) were not slow in exacting their share of the general spoil. Several attempts were made to check their atrocities; and on one occasion the Ahom ruler Raja Gaurinath Singha is said to have marched an army into their hills for the purpose of chastising them; when as native historians tell us, several thousand Daphlas were taken prisoners and brought down to the plains" (Robinson, 1851: 126-127).

In 1881 C.W. Beresford, writing about the Mishmi tribe living presently in the Lohit district claims, the Mishmis who lived to the west of the Digaru River were called as Digaru tribes by the British (Beresford, 1881: 28; Singh, 1989: 12). On the origin and writing of the past history of the Arunachalee tribes, we gather some information from R.G. Woodthorpe's work whereby he goes to say that like the other tribes of the North East India the real origin of the tribes of Arunachal Pradesh is shrouded in mystery and doubt. The written history of these tribes before the arrival of the British to this part is not available. Probably due to illiteracy prevailed among these tribes, they could not write their past. They lived in such inhospitable mountainous terrains that the people from the plains could not establish any contact with them which resulted in the scant information on their early history and origin (Woodthorpe, 1882: 56-72 & 196-212). C.H. Lepper in 1882 mentions about the Singpho and Khampti tribes living independently in the Hukwang Valley before their migration to the North-Eastern part of India. But when they settled in the hilly areas of Assam, they accepted the sovereignty of the Assamese rulers (Lepper, 1982).

Woodthorpe's *General Report on the Topological Surveys of India for 1874-75* also contains valuable references to the geography and people of the hills. Captain John F. Michell's *Report (Topographical, Political and Military) on the North East Frontier of India*, first published, Calcutta, 1883 under the title *The North East Frontier of India* contains reports on the Abors (Adis), Mishmis, Singphos, Khamptis, Miris and Daphlas (Nyishis) giving their geographical position and topographical history and a chronicle containing all the important events connected with each tribe for hundred years. It also showed their military operations and political relations with each of the tribes and the routes into their territories. Moreover, C.R.

Macgregor's article '*Notes on Akas and Akaland*', published in the Proceedings of Asiatic Society of Bengal, Calcutta in 1884 proves to be a worthy treasure on the Akas living in the West Kameng District of Arunachal Pradesh.

J.E. Needham's '*Report on a Trip into the Abor Hills, 1884*' (Shillong, 1885) and '*On the Bebejia Mishmi Expedition, 1889-1900*' (Shillong, 1900); G.W. Dun's '*Preliminary Notes on Daphlas*' (Simla, 1896) and '*Preliminary Notes on Miris*' (Simla, 1896) are reports narrating the life style of the people which are considered no less significant historiographical documents for today's scholars.

Capt. W. B. Hore's '*Report on the Abor Country*' (Simla, 1913) regarding the outcome of the operations against the Adi villages responsible for the murder of Mr. W. Williamson, the then Assistant Political Officer, Sadiya, Assam on 31st March, 1911 provides wholesome information. He writes, "The results of the operations were that punishment was inflicted on the hostile villages. All the men who had particularly participated in Mr. Williamson's murder were caught, tried and sentenced; all rifles looted were restored; and the country was traversed throughout its length and breadth" (Hore, 1913: 10).

Several other reports of the British officers on their exploration missions into the then Arunachal and even ethnological reports throw light on the socio-politico-economic and environmental history of the tribes of Arunachal Pradesh. F. M. Bailey's '*Report on an Exploration on the North East Frontier, 1913*', (Simla, 1914); Major C. Bliss's '*Report on the Debong Survey and Exploration Mission*' (Shillong, 1914); Captain R.S. Kennedy's (Captain Kennedy was the Medical Officer of the Aka Promenade of 1913-14) '*Ethnological Report on the Akas, Khoas, Mijis and Membas of Tawang*' (Shillong, 1914); and G. Duff-Sutherland Dunbar's '*Abors and Galongs (Memoirs of Asiatic Society of Bengal, Vol.V, 1913-17)*' give several accounts of different tribes of the time of the state like Mishmis, Khambas, Akas, Khowas (presently known as Buguns), Mijis and Monpas. Maxwell, the Political Officer also reports on the nature of the Akas. He goes to say that if all the savage races of the North-Frontier of Assam Province were compared, the Akas had been meant more contumacious and troublesome (Maxwell, 1914: 41-116) who used to commit raids on the plains people of Assam for collection of *Posa* by force and to plunder them.

The multiplicity of tribes in Arunachal (the major tribes being noted in 1945 were Bhutia, Daphla (Nyishi), Miri, Abor (Adi), Mishmi, Khampti, Singpho, Nishi, Tagin, Apatani, Wancho etc.) (Intelligence Branch Division, 1945: 162-63) and their heterogeneity are due to the confinement to their respective ridges and mountainous terrains after migrating to this part in different groups (Barkataki, 1969: 1-5; Singh, 1989: 6). Because of their long isolationistic character, all of them developed their separate and independent way of living. Though there is no evidence of missionary activity in the present state of Arunachal Pradesh except outside its boundary in Assam, the tribes of the areas are said to have come in touch with the British through the Western Missionaries. When the Christianity appeared as a great religious force in the hilly areas of Assam, it largely changed the social and cultural outlook of the hill people. This is what Mr. W.C. Smith reports in 1923 (Smith, 1923: 15-18). These are not less historiographical authenticity to encourage the scholars to delve deep into them for writing history on the state.

Moreover, R.C. Cunning's notes on the Abors and Miris (Cunning, 1923: 13-14); H. I. Halliday's '*The Abors of Assam*', *United Empire,* Vol. XIX (1928); J. F. Needham's 'Report on the Abor villages beyond the British Frontier (1884)' *Assam Review*, Vol. II, No.7 (1929); P.G. Huddleston's '*Abor Military and Political Mission 1912-15*', *R. Engineering Journal*, Vol. XLIV (1930); N. L. Bor's '*The Daphlas and their Oaths*', *JRASB*, Vol. II (Third Series, 1936); N.L. Bor's '*A Sketch of the Vegetation of the Aka Hills, Assam: A Synecological Study*', *Indian Forest Records, N.S. Botany*, Vol. I (1938); C. von Furer- Haimendorf's '*Agriculture and Land Tenure among the Apa Tanis*', *Man in India*, Vol. XXVI (1946); C. von & E. von Furer- Haimendorf's '*Notes on Tribal Justice among the Apa Tanis*', *Man in India*, Vol. XXVI (1946); and J. P. Mills' '*A Brief Note on Agriculture in the Dirang Dzong Area*', *Man in India*, Vol. XXVI (1946) too speak high of historiographical sources to excavate archaeology of information on the different tribes of the state like the Abors, Nyishis, Akas, Apatanis and Monpas.

V. Monographs

Large number of documents written and compiled by the British Officers in the colonial period, both civil and military, on their interaction with the various tribes of Arunachal stand milestone as historiographical compendium entailing the geographical, climatic, legal and customary issues of the people.

The publication of monographs on various hill tribes of North east India is one of the most outstanding contributions of the British towards the understanding of the tribes of the hills. With the gradual extension of their power over these hills, the British tried to come in close proximity with these diverse hill tribes and their heterogeneous society and culture and therefore felt it necessary to plan out strategy to know more and more about them for effective administration.

The first and the most productive work on the history and commerce of Assam with references to commercial products of the then Arunachal getting exchanged in the plains of Assam, was undertaken by Captain Welsh's collaborator, Dr. John Peter Wade who compiled *An Account of Assam* during 1794-1800 from indigenous sources and deposited it in the India Office Library, London, which was edited and published by Benudhar Sarma in 1927. One more work of Dr. Wade was *Geographical Sketch of Assam*, compiled during 1786-1802, edited and published by S.K. Bhuyan as discourse-series in the *Assam Review*, Silchar in 1928-29 under the title '*Assam in the Eighteenth Century*' deals with the information on the division of rivers, towns, villages and productions of the Province in which references were made to the surrounding hills, people and their products. *The Frontier* (London, 1832) by G. Dunbar refers to the geography and the people of the hills on North East India. John M'Cosh's *Topography of Assam* (London, 1837) also acknowledges information on the extent of territories, cultivations, governments, houses, migration, trade and customs of the tribes of Arunachal like the Nyishis, Kapachors (one group of the Akas), Miris, Adis, Mishmis, Kamtis (Khamptis) and Singphos (Sangma, 1994: 7).

A Descriptive Account of Assam (Calcutta, 1841) by William Robinson who got associated with the education of Assam for a long period and the first Inspector of Schools, Brahmaputra valley, puts a vivid account on the extent of territories, habits, manners, customs of the hill tribes, such as, the Akas, Nyishis, Miris, Abors, Mishmis, Khamptis and Singphos of Arunachal. John Butler's *A Sketch of Assam with Some Accounts of the Hill Tribes* (London, 1847) gives a picture of the early life of the hill people. While J. Beams in 1867 speaks about the Abor (Adi), Miri and Dafla (Nyishi) numerals (Beams, 1867: Appendix), E.T. Dalton in 1872 gives accounts of the Khamptis, Singphos, Mishmis, Abors (Adis), Daflas (Nyishis) and Akas (Dalton, 1872:1-38). T.T. Cooper's *The Mishmee Hills* (London, 1873)

deals with his visits to the Mishmi areas and his encounters with them. *A Statistical Account of Assam,* Vols. II and III (London, 1879) of W.W. Hunter is another important source book for the study of the hill people of the region. Moreover, G. Campbell (Campbell, 1874: 21-35) also describes about Adis and Nyishis and gives their vocabularies in 1874.

The most outstanding historical work *History of the Relations of the Government with the Hill Tribes of North East Frontier of Bengal* (Calcutta, 1884) of Alexander Mackenzie based on a detailed examination of all the records from 1780 till 1882 from the Bengal Secretariat and Foreign Department and the Assam Annual Administrative Reports deals not only the political history of the North East Frontier but also its people's manners, customs and ethnological affinities. Mackenzie's theory of migration of the Singphos (Mackenzie, 1884; Lepper, 1882; Phukan, 1848; Shakespeare, 1914); J.F. Needham's monographs (Needham, 1889; 1894; 1895) on Singpho and Khampti languages, and on the Abor Hills; J.D. Anderson's *Short Vocabulary of the Aka Language* (Shillong, 1896); W. Crooke's *Abor, Abor-Miri,* Hasting's *Encyclopaedia of Religion and Ethics* (London, 1908), Vol. I; G. A. Grierson's *Linguistic Survey of India*, Vol. III, *Tibeto-Burman Family*, Pt. I (Calcutta, 1909) and J.H. Lorrain's *A Dictionary of the Abor-Miri Language with Illustrative Sentences and Notes* (Shillong, 1910) go to give us a lot of historical sources on the languages, religion and ethics of different tribes of Arunachal like the Singphos, Khamptis, Adis, Akas, Miris, Nyishis and Mishmis.

The historical work *A History of Assam* (London, 190ɔ) by Sir Edward Gait, the magnum opus, has been acclaimed as the most valuable work on the history of North East India by all students and researchers, a classic of its kind. B.C. Allen's multivolume, *Assam Gazetteer* (Calcutta, 1906) is a basic work for the study on the history of the people of North East India. His other work *The Imperial Gazetteer* (London, 1909) is a shorter account of the places and their people and is an invaluable work on the history of this area.

Even some of the works based on expedition- experiences prove to be worthy primary sources to decipher important information about the tribes during the period. Researchers are immensely benefited by such works to reach out closest to the facts available in the then period for placing them on records further with different research orientation and interpretation required in today's world. That is how Arunachal is still considered as the treasure-

house of knowledge. Its unique social, religious, cultural, linguistic and ethnic dialectics with tribal heterogeneity have attracted many a scholars to delve themselves deep into such ever-exploring social phenomena.

A. Hamilton's *In Abor Jungles* (London, 1912) which describes the Abor Expedition and the Mishmi and Miri Missions; P. Willington's *On the track of the Abor* (London, 1912); F. Kingdon- Ward's *A Plant Hunter in Tibet* (London, 1934) with two chapters detailed out on the Mishmis; G. Dunbar's personal visit account on the environmental history being much sought after an inter- disciplinary issue of research in social science in the recent days of the state, calling the then flourishing villages of Arunachal within a valley midway between the foot-hills and the main snowy range, as the heart of the tribal country remaining insular from the influence of Assam with its Indian and western form of civilization and it is too far for south to be affected by the religious ideas and customs of Tibet (Dunbar, 1938: 230-31); and Kingdon-Ward's *Assam Adventure* (London, 1941) with references made to Monpas living in the western side of the state are worth-research published works to deal with Frontier History.

A Collection of Treaties, Engagements and Sanads, Vol. XIII (Calcutta, 1931) by C. U. Aitchison holds to be a very important document for the study of the British expansion in North East India. One more work entitled *The Linguistic Survey of India* with its volumes II and III (Calcutta, 1909 and 1928) by Sir A. Grierson stands as a unique historical document containing an account on the hill tribes of North East India. It deals with the division and classification of the people of India on the basis of linguistic similarities. Besides, it also provides an account of the tradition of their origin, migration and settlement on the basis of their linguistic affinities and oral traditions. The other commendable historical work that needs a special mention here is *History of the Frontier Areas Bordering on Assam, 1883-1941* (London, 1942) by Sir Robert Reid, taken to be a continuation one of A. Mackenzie's monograph of 1884 unto 1941. This way, Reid's work completes the history of British relations with the hill tribes of North East India from their very first contact with the British till almost to the fag end of the British hegemony in India.

VI. Conclusion

The historical sources discussed allow us to believe that they always contained distinctive clues which further enabled the historiographers to place the

sources alongside other familiar pieces specifically on an issue for the readers to follow. They are also construed to have demonstrated knowledge and understanding of historical developments, events and issues of the time and set directives how to trace them for relevance to the researcher's area of investigation. The provenance of the records goes to suggest the authenticity of the time, purpose and area of writing and documenting them for posterity. Setting the fulfillment of British agenda of creating colonial knowledge apart, a dispassionate evaluation of all such historical records goes to imply one thing very significant that the British officials while discharging their responsibility of administration, exploration, survey and expeditions stood positive towards contributing relevant issue related literature basing on their knowledge and experience. North East India owes deeply to such colonial literature for being given priority despite being the fact that it threw no less bold challenges to them in terms of geographical test, climatic inclement, inhospitality and journey hazards. It is quite encouraging for the scholars of the region to take them into account for any of piece of research to be undertaken on the period. They are taken primary before anything else to be harboured upon to decipher relevance to a topic of research. Similar is the case for the scholars of Arunachal Pradesh to go optimistic on the issues discussed.

Arunachal Pradesh, though treated as a land of insularity, had invited the attention of the British since the beginning of the British rule in India. Reports on the tribes of the state were prepared even before the annexation of Assam to the Company's territories. Great task was endorsed by the Company to Francis Hamilton (later known as Buchanon Hamilton) and R. B. Pemberton to prepare reports on the provinces on the Frontiers of Bengal. After Assam being annexed, the British officers, civil and military, posted in Assam were asked to prepare reports on the frontier tribes and the officers recorded their exploratory reports that stand cynosure for providing valuable information on the different aspects of tribal life in the state of the time.

Though the colonial rule never attempted to prepare an account of the different tribes of the frontier region, efforts were made from 1881 onwards to include monographs on the frontier tribes in the Census of India Reports. The Census Reports were a distinct category where a sketchy profile was included. Thus, by 1947 all but the tribes of the western hills and those who lived on the fringes of the border were covered in all such reports. Criticising

the volume of literature M. L. Bose writes, "Such bewildering mass of reports and accounts of various kinds are elusive, some are biased, others suffer from lack of understanding, and a few are partial and incomplete" (Bose, 1979: vii). Despite criticisms being labeled against such works published and documented during colonial period by the British officials on Arunachal Pradesh, they are considered as the basic and solid sources of historiography for carrying out interdisciplinary research on the heterogeneous tribal societies in all their aspects of the contemporary period and beyond, with exceptions of skeptic misunderstanding on the varied nature of the tribes, sub-tribes, clan structure and names of the places.

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The term '*Posa*' literally means a collection of subscription for a common purpose. It was the practice of collecting forcible exactions from the low lying villages, of the plains, adjacent to the hills, by the tribes of Arunachal Pradesh since the Ahom days. The British commuted this claim of *Posa* into money payment. Details on *Posa* refer to Jha, B. N. 1996. 'Politics of Posa: A Case Study of Pre and Post Independence Scenario in Arunachal Pradesh and Assam'. *Proceedings of the Indian History Congress.* 57th Session. Madras University.

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