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ENVIRONMENTAL ORIENTATION OF AN ECOTEL -CASE OF THE FERN, JAIPUR

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Abstract

Tourist destinations today require ethical reasons for developing in a sustainable manner. Hospitality industry is witnessing a rise in demand for “Green accommodation “and stringent regulations from the government regarding better waste disposal and improved water and energy conservation practices. This would contribute to the long term sustainability of the tourism sector as well. This paper reports the results of a study conducted to assess the resource conservation and waste management practices at a 5 star hotel of Jaipur city-The Fern. It offers an input to the concern of foundations for the development of strategic environmental orientation of the hotel. The energy and water use as well as the waste generated in the various hotel activities have been estimated along with the best practices and inefficient practices observed at this hotel. The benchmarks for hotels in other countries have also been specified.

Key words: Tourist destinations, Green accommodation, sustainability, best practices, benchmarks

Introduction

The travel and tourism industry has long been identified as negatively affect on resources and the global environment (Dubois and Ceron, 2006). Stohl(2008) noted that more than 90% of tourism related carbon emissions arise from aviation, 3% from surface transportation- based tourism and 5% from hotel operations. The hotel industry is one of the most energy and water intensive sectors in the tourism industry (Bohdanowicz, 2005). Within the hotel sector, increasing number of customers prefer to choose a green lodging facility that follows environmentally friendly practices showing concern about the seriousness of ecological degradation(Han, Hsu and Sheu, 2010; Manaktola and Jauhari, 2007).In recognition of this eco-friendly consumption need, nowadays many hotel firms seek to incorporate customers’ emerging concerns about the environment in their management/ marketing decision making (Bohdanowicz, 2006; Lee, Hsu, Han and Kim, 2010). A number of factors contribute to the importance of environmental strategy and management in hospitality industry (Deb and Welling, 2011).The heightened interest in environmental accountability will become the

challenge of not only developing corporate environmental objectives and strategies but also achieving effective implementation. . The study is an attempt to explain the current resource use and waste from an Ecotel at Jaipur city in terms of energy, water consumption and solid waste.

Literature Review

It is believed that hotels have produced enormous harm to the environment by, for example, consuming vast quantities of non- recyclable products, generating tremendous waste, consuming substantial amounts of water and energy and emitting carbon di oxide and air, water and soil pollutants (Bohdanowicz, 2005; Chan, 2005). Growing public concern over environmental damage and customers' desire for environmentally oriented products have stimulated hotel operators to green their operations (Han et.al. 2009; Manaktola and Jauhari, 2007; Wolfe and Shanklin, 2001).

Indian hotel sector is on the high growth path with surge in business and leisure travelers (Ventatchalam and Patwardhan, 2011). According to Brand Equity Foundation (2010), "India is expected to double the number of branded hotel rooms from 100,000 now in just three years. Lending the pack are global hotel chains, which will add over 300 hotel properties (an estimated 55,000 rooms) in the country by 2013, as per data compiled by companies. With increasing demands for hotel services these hotels have become an enormous consumer of energy, water and waste resources. Researchers and practitioners agree that the greening of a hotel contributes to satisfying eco- friendly customers' green needs, avoids criticism of existing tourism practices, fulfils the requirements of government regulations and substantially decreases costs through waste reduction, water/ energy conservation and recycling (Chan, 2005; Han et.al., 2009; Wolfe and Shanklin, 2001). According to Wolfe and Shanklin (2001), the term "green", which can alternatively be called "eco-friendly", "environmentally responsible", "environmentally friendly", "sustainable" and "environmentally oriented" (Han et.al., 2009; Pizam, 2009), refers to actions (e.g. recycling) that diminish harmful impacts on the environment. Hence green hotels can be described as environmentally responsible hotels that actively follow environmentally friendly guidelines, practice environmental management, implement diverse eco- friendly guidelines , practice environmental management implement diverse eco- friendly practices, institute sound green programs and commit themselves to achieving environmental improvement by displaying eco-labels or a green globe logo (Department of Environmental Protection, 2001; Green Hotel Association, 2008; Han et.al., 2009, 2010; International Hotels Environmental Initiative, 1993). However at present there are no existing guidelines for the efficient use and

management of these resources (Almoudi, 2009). Elkington and Burke (1991) argue that the first step in the process of strategy formation should be to construct an environmental policy. Kirk (1995) reported that only about 20% of his sample of hotels had a written environmental policy. In his study on attitudes and environmental management, Kirk (1998) addresses the factors that determine the deployment of environmental management practices and its effects on hotels. Webster (2000) speaks only about the primary environmental issues. The various environmental impacts of a hotel have been stated by Graci (2009). Various factors contribute to the success of the hospitality industry and an increased interest in developing corporate environmental objectives and strategies will help in meeting the increasing demands effectively.

Table:1 The environmental impacts of a hotel

Service/Activity	Description	Environmental Impacts
Administration	Hotel Management Reception of clients	Energy, water and materials Generation of waste and hazardous waste
Technical Services	Equipment for producing hot water and heating Air Conditioning Lighting Swimming Pools Green Areas Mice and Insect Extermination Repairs and Maintenance	Energy and water consumption Consumption and generation of a wide range of hazardous Products Air and soil emissions Generation of waste water Pesticides use
Restaurant/ Bar	Food conservation Food Preparation Dish Washing	Energy water and raw material consumption Packaging waste Oil waste Organic waste Generation of odors
Kitchen	Food Conservation Food Preparation Dish Washing	Consumption of energy and water Packaging Waste Oil Waste Organic waste Generation of odour
Room Use	Use by Guest Product's for guest use Housekeeping	Energy, water and raw materials consumption Use of hazardous products Generation of waste packaging Generation of waste paper
Laundry	Washing and ironing of guests clothes Washing and ironing of hotel linens	Consumption of energy and water Use of hazardous cleaning products

Source:Graci, S. 2009

Methodology

The present study is an empirical study where data was collected from the respondents by means of a questionnaire. The information was collected from the Environment Department of the Fern Hotel, through open and closed ended questionnaire followed by personal interviews during 2014-15. The questionnaire was based on certain variables as environmental accountability, measures adopted, consumer response to environmental practices, role of top and middle level management and staff training. Besides the questionnaire also requested data regarding the resource use (electricity, water) and wastes and qualitative data regarding current resource use and practices by various hotel departments(Housekeeping , Laundry, Kitchen and restaurant, front office, garden area and other departments).

The Fern-The First Ecotel in Rajasthan

The mission statement of the Hotel clearly states that –The Fern Jaipur-An Ecotel Hotel strives towards continuously and consistently delighting guests with a choice of excellent hospitality products and services by creating pleasant memories, while moving towards sustainability in the areas of water, waste and energy management, strengthening community relations, assuring good returns to owners and shareholders. Similarly the vision statement boasts of setting benchmarks in environment friendly practices. The three commitments of the hotel are dedicated to the environment, job performance and team spirit. Corporate environmentalism has transcended in this hotel from the top management which firmly believes that it is a valuable aspect of the organization because it echoes organization's core values. It's importance is strengthened by institutional pressures. The management believes that the hotel's eco-practices not only aids in bringing down the GOP(Gross operating profit) but also provides a sense of satisfaction that it aids in protection of the environment.

This vision of sustainability is also clearly communicated to all the staff members and stakeholders and is printed on all important documents of the Hotel. Each employee is clear about the rationale for sustainability, understands his role and functions in relation to practices that are beneficial to the environment. Community involvement is also ensured through silent runs like teaching in schools and promoting plantation and cleanup activities in the city area.

Ecotel

ECOTEL was developed by HVS in association with the Rocky Mountain Institute, USA with the help of engineering and hospitality experts. It has now been revised to include the SF Green Business Program's guide for hotels and restaurants, the most vigorous standard for the hospitality industry in the United States, and is pending the United Nations' GSTC ratification. It is an environmental certification that enables hotels to enhance their profits by being truly green, socially responsible, and sustainable over the long term by involving the entire value chain of owners, architects, operators, employees, suppliers and hotel guests.

Three tiers of certification based on overall reduction in consumption

40-50%

50-60%

60-95%

The Fern Jaipur is now certified green ECOTEL in Tier 3 (40-50%) resource consumption reduction. HVS Sustainability Services calculates environmental and fiscal savings by employing:

- Onsite visits,
- Staff interviews,
- Auditor observations, and
- Hospitality industry experience-based simulations.

These measures are both engineering and technology based, as well as behavioral. The report prepared by HVS primary takes into consideration fiscal and environmental impacts such as financial savings on utility bills and direct environmental impacts such as emissions. HVS environmental and financial computations do not calculate secondary savings such as carbon credits, embodied energy, or secondary health/ respiratory impact of emissions or indoor air quality.

Energy consumption in 2015

Figure 1

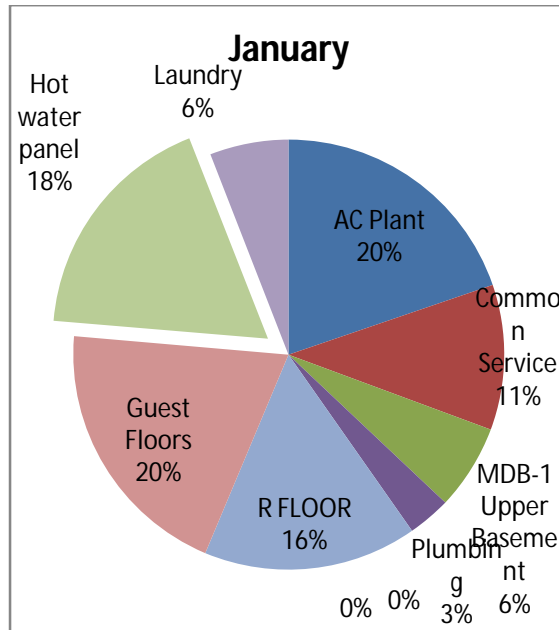
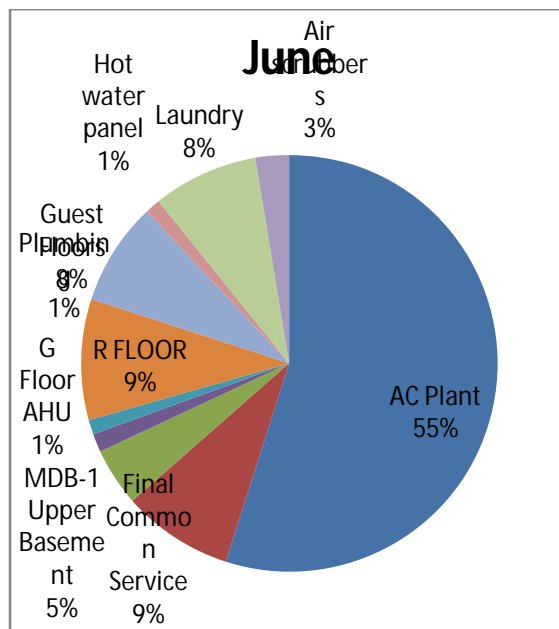


Figure 2



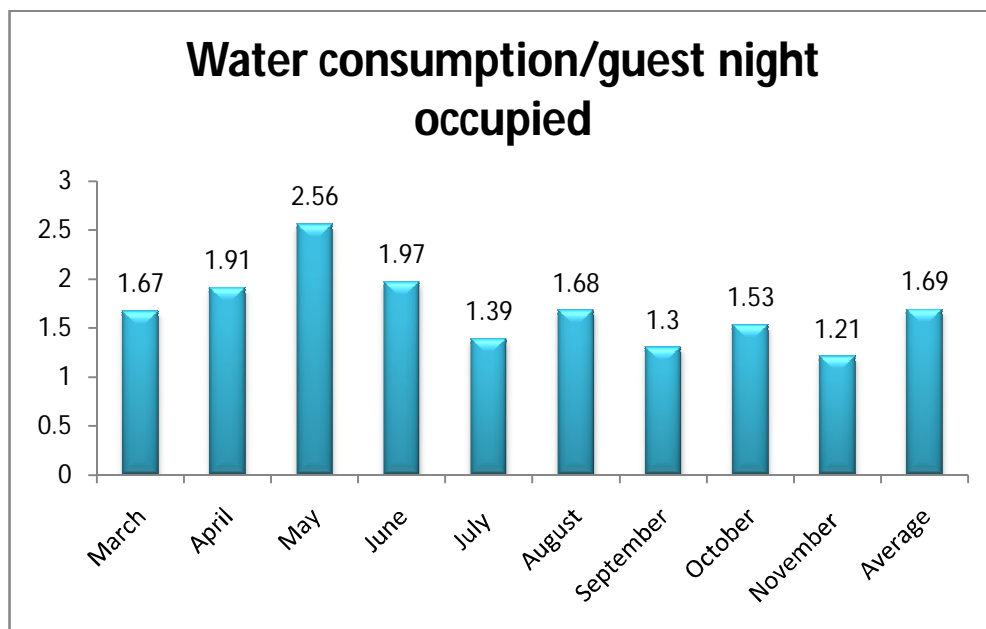
About 50% of the overall energy consumption in hotels is due to space conditioning. As depicted in the Figure 1 and 2 for summer and winter consumption of energy the AC Plant is seen to have the maximum consumption (55%) and about 20% in winters. The percentage of total energy consumed by the hot water increases in winters.

The main sources of energy used in hotels are electricity, LPG and coal. Electricity however dominates all the above sources of energy. The upcoming technologies in architecture with the concept of green buildings and solar energy have been proposed by some of the 5 star hotels at Jaipur which can bring down energy consumption to significantly lower level.

Water Consumption

The major areas where water is consumed are the guestroom, laundry, kitchen, and garden areas. Water consumption also varies on account of variation in the outdoor temperatures where the range is from 10-46 degrees in a year. The water consumption was found to be lower than that reported by Alamoudi (2009) : namely 1-2.56 m³ water/guestroom/day.

Figure 3 Water consumption from 2014-2015



Waste water and other wastes

The water consumption has been found to be highest in the miscellaneous tasks and RO.

Figure 4

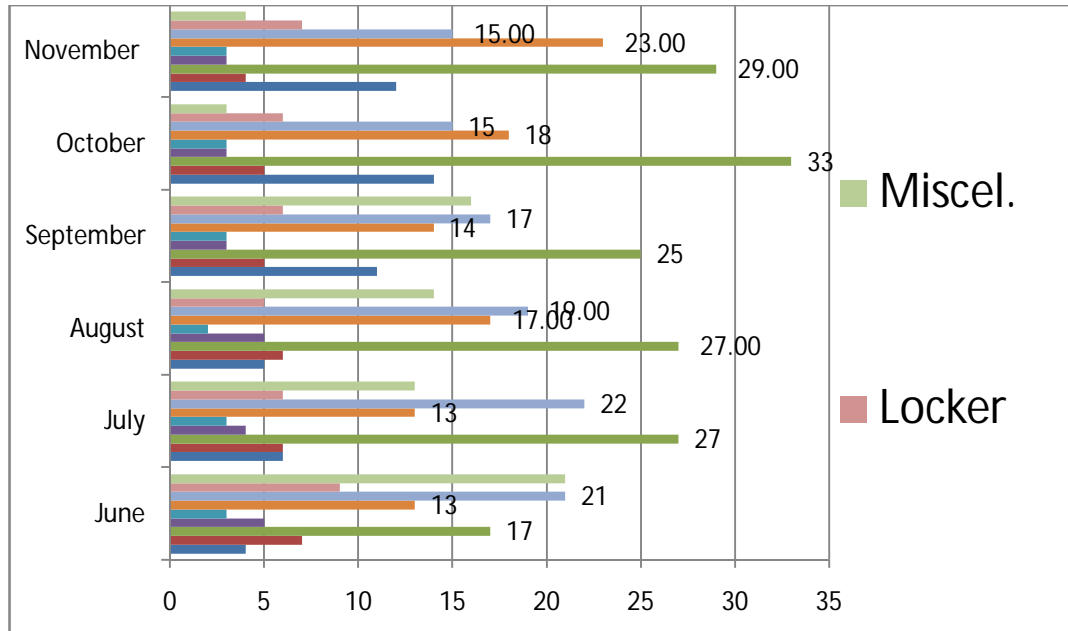
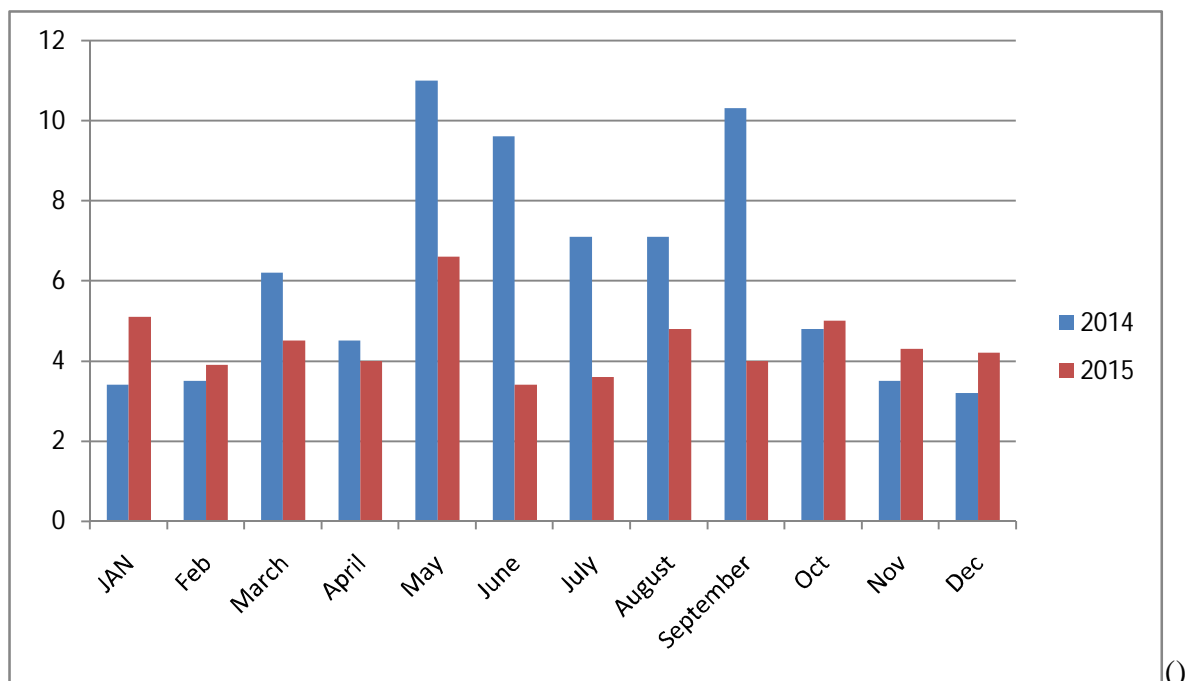


Figure 5 Wastes produced during 2014-15(Kg/day)



The sources of solid waste in the Hotel were mostly from the kitchen, guestrooms, offices, laundry and garden wastes. The composition of the solid waste varies from food waste, plastic, paper, garden waste to chemical wastes. Much of this waste was compostable materials in all the hotel categories (40-65%). The total amount of waste generated varied from day to day on account of the occupancy rate of the hotel. This variation was more during the tourist season when the inflow of tourists was more.

Discussion

Fern Jaipur is now certified green ECOTEL in Tier 3 (40-50%) resource consumption reduction. In view of the globally growing environmental degradation, the need for effective measures is increasingly endorsed by guests and industry. Approximately 40% of more than 3000 respondents to a hotel industry survey confirmed use of different quantitative measures of environmental performance, including those relevant to energy use and water consumption, waste disposal as well as volume and treatment of waste water (environmentfriendlyhotels.com). The total energy savings in case of FERN is 14% which is approximately 3, 00,606 KWh. According to Hotel industry statistics, utilities make up 30% of the average hotel's operating cost- a huge percentage with a major impact on the bottom line and the environment. Inefficient use of lights, heating and AC is one of the major culprits in the waste of resources. The potential savings are impressive according to one Energy star estimate, cutting energy use by just 10% could save nearly \$ 300 million for the industry as a whole (Alexander,S.,2002).The total percentage of water savings has been about 27% of the overall consumption. Day today sub metering has been done in the hotel that has enabled understanding of the trends of water use. Low flow rate fixtures have been used by the hotel. Besides the hotel is actively using recycled water for all outdoor areas. It is estimated that water use will increase to approximately 475 gallons per day for each room in high luxury facilities. However in other accommodations, water use is still a cost and an important stress on the local environment (Alexander S., 2002).As indicated above the waste is segregated and weighed on a daily basis and the trends are monitored to understand their pattern. The hotel has reduced the waste generated per room night by 26% and dry waste generated by 30%. In the compostable fraction major portion was the fruit and vegetable waste and yard waste in some categories. These results are comparable to those suggested by Haong (2005). . These results are comparable to those reported by Trung and Kumar (2005)for hotels in Vietnam: namely 2.5 to 7.2 kg/guest per day at 4 star hotels. The diversion of solid waste achieved is 95%.

Table 2

Estimated savings:	
3,00,606 kWh	Energy Savings (14%)
47,96,376	Water Savings (27%)
83,920 Kg	SW Diversion (95%)
3.36L	Kg CO2 emissions (0 Transport)
45.3%	Average reduction

Conclusion

A vast room for improvement still lies in various areas in the hotel industry for meeting the standards of sustainable development. The most reliable proof for meeting the green standards is a certificate. The Fern is continuously striving for meeting these standards in a consistent manner. The Ecotel certification and its benchmarking tools will definitely help it in this direction. As stated in Table 3 there have been vast savings in terms of the operating costs of the hotel. There has been Rs. 40.47 Lakh annual reduction in the operating costs of the hotel. The total savings have been of 2.02 crore in 2015 again is a substantial amount. This contributes to about 3.57% of the gross operating profit. The increased footfalls of the customers justify the view that greening hotels does not bring down customer efficiency as the economic condition of hotels is directly connected with customer service level and customer satisfaction. In view of the case of Fern hotels should provide tourists with the products and services in line with the full use of resources and environmental protection requirements. The key is that greening initiatives are not expensive to implement and can provide substantial benefits to the business.

Table 3

Rs 40.47 L Annual reduction in operating costs
Rs 2.02 Cr savings in five years.
3.57% of GOP

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THE KEY TO KEY ELEMENTS IN CORPORATE GOVERNANCE OF STATE AND CENTRAL UNIVERSITIES IN INDIA

P.Chattopadhyay *

Abstract

The whole concept of corporate governance came about as a measure to stall the widespread, world-wide malpractices covering top management and men in different reputed large scale corporate organizations, demolishing the edifices of long-built and long-performing corporate organizations due to the machinations of individuals that threatened the long established order called capitalism and caused gargantuan losses to the concerned economies. The spread of disorder knew no national boundaries or the governmental systems, making them desperate and hapless victims. This paper examines whether universities are also victims of the doldrums!

The Issues of Concern

The Universities in India are all statutory bodies either by virtue of State or Central legislation and are bodies corporate par excellence, apart from those private Universities established and recognized under a clause of the UGC Act. As such, the governance issues are relevant to them as much as they apply to companies but as mainly non-profit bodies their stance is eminently different, *mainly* because under private, non-government dispensation, education has become big business. Motivations apart, they are both vitally concerned with the tenets of good running, especially considering that Universities are virtually a storehouse of knowledge and capabilities that remain unexplored. Issues in corporate governance are mainly concerned with imposition of external gaze into the running of the corporate bodies and are not immediately concerned with the quality of running of the corporate bodies as much as looking into issues concerning propriety of managing different issues related to running the organizations properly. Corporate governance tenets ensued from the widespread malpractices that surfaced in many of the large companies centred basically on the stock market. The Universities as statutory bodies are safe from the onslaught of the stock exchanges in which context India has had the unsavoury experience of two scams caused by individual share brokers like Harshad Mehta and Ketan Parikh that created a furore among the public at large and the Parliament whose reports acted more as temporary palliatives than permanent solutions. It is important to note that the second stock market scam came to light

several years later than the first and the Parliament had already considered the Report on this and suggested steps to be taken on the errant functionaries in the first scam which could not prevent the occurrence of the second. Luckily such eventualities do not concern the Universities in general and the real dimensions of dysphoria are small. Corporate Governance does not concern itself with the efficiency of operations day to day, at least not as much as the propriety of functioning as a measure against fraud. It is the latter that concern Universities most. The idea of corporate governance was conceived as a measure to address and prevent fraudulent practices in different large scale companies in the USA like Enron, WorldCom, the UK like Barings and BCCI and different countries of Europe like Parmalat of Italy, Societe Generale of France, etc. Such mishaps are a distant possibility in the cases of Universities because of the generally meagre resources handled by them compared to the giant companies. As if the Corporate Governance pointers were not enough, the US Senate enacted the Sarbanes-Oxley Act in 2002 with a lot of provisions which were harsh, purposely. The result was that Kenneth Lay of Enron died of heart failure and Bernard Ebbers of WorldCom started weeping in the court room when the punishment of twenty years in jail was handed to him under the new law. Satyam Computers of India has been recently jailed only for seven years almost like Nicholas Leeson of Barings Inc who was jailed for six years at Singapore, on the expiry of which period he bought Barings Inc. for ONE pound sterling and is now the proud owner of an Irish Football Team. At least, the Universities are safe from the demonic rush of miscreants because of the usual, prevailing phenomenon of living from hand to mouth. Is it then that the Universities are precluded from exercising a strict vigilance over their qualities of performance? Far from it! Not only that the quality of performance calls for upgradation all the time, but also that such upgradation has got to be visible in the results. Here again, it is a reality that Universities are not meant for showing off like many so-called private Universities, many of which seem to live by advertisement!

Compulsions

Compulsions eminently come from having to make the best use of the meagre resources that they are required to handle. The real resources of the Universities are the people who man the academic and administrative wings, the talents that are harnessed and the efforts going behind the teaching and research activities. The broader ideas and issues behind Corporate Governance relate to regular and systematic review and appraisal of the resources – both in terms of money and scholastic abilities – deployed for realization of the objectives. Corporate Governance has in fact three planks of which more than one are indeed applicable to

Universities. One, audit, maybe by the AGs of different States at regular intervals. Two, pre-audit or concurrent audit when expenditure exceeds a stated sum. Three, a special audit of expenditure under specific heads, maybe grants from the Government for a specific programme of research or other activities. Defaults on these are frequent and the responses are often lackadaisical. The spirit behind the introduction of Audit Committees under the scheme of Corporate Governance may have to be found in all these. The idea of Audit Committee was not new when it was introduced as a part of the scheme of Corporate Governance introduced in 1992. The Audit Committee formation was suggested by the Cohen Commission in 1978. Its effectiveness depended on the seriousness with which the top management viewed the proposition. Sherron Watkins, the Internal Auditor of Enron, submitted a twelve page note to the Audit Committee of Enron about the impending crisis of the company but no action was taken and the Committee just sat over it, before it was too late! The crux of the matter is that the Universities do have the necessary expertise to effectively initiate in-house surveillance in this regard, but they generally remain uninvolved and rather unconcerned. Thus, instead figuring as a collective noun, they have virtually figured as nouns of multitude!

The Key Elements in Corporate Governance

- a. An independent Board composed of a majority of directors who have no material relationship with the company;
- b. An independent chairperson of the Board;
- c. An Audit Committee that effectively maintains relationships with internal and external auditors;
- d. An Audit Committee that includes at least one member who has financial expertise, with all members being financially literate;
- e. An Audit Committee that has the authority to retain its own advisers and launch investigations as it deems necessary;
- f. Nominating and Compensation Committees composed of Independent Directors; a Compensation Committee that understands whether it provides particularly lucrative incentives that may encourage improper financial reporting practices or other behaviour that goes near or over the line;
- g. Board and Committee meetings regularly held without management and CEO present;
- h. Explicit ethical commitment and a tone at the top that reflects integrity in all respects;
- i. Prompt and appropriate investigation of alleged improprieties;

- ⌋ Internally publicized enforcement of policies on a ‘no exception’ or ‘zero tolerance’ basis;
- ⌋ Timely and balanced disclosure of material events concerning the company;
- ⌋ A properly administered hotline or other reporting channels, independent of management;
- ⌋ An internal audit function that reports directly to the Audit Committee without fear of being edited by management;
- ⌋ Budgeting and forecasting controls;
- ⌋ Clear and formal policies and procedures, updated in a timely manner as needed;
- ⌋ Well-defined financial approval authorities and limits; and
- ⌋ Timely and complete information flow to the Board.

N.B. Several other points in the aforesaid context may be restated for making the functioning of the Universities centripetal to the objectives of learning rather than passing examinations . Generally, serious efforts for putting them on the rail are absent. Better financial management and hearty participation of teachers can make the best in the situation, especially for lifting these activities from the morass in which these find themselves now.

Likeness of these Issues in Universities

Likeness of many of these points in the context of Universities does not require particular emphasis. One has to take into view the systems of University accounting and auditing processes in vogue and assess their effectiveness in light of the growing complexities in the systems of management practised in Universities and the institutions in vogue, apart from the committees and councils as provided in the respective enactments behind the Universities. In general, it may be mentioned that though commonly housing many an interdisciplinary expertise the Universities have chosen to function as extensions of the bureaucracy. There have been teachers in different Universities who do not like to undertake administrative responsibilities in preference to teaching and research. Very good teachers and researchers can be named whose research efforts came to a halt when they undertook administrative jobs. Their high posts and attendant prestige were no substitute for the loss to the academia. It is necessary for Universities to acknowledge the merits of teachers and accord prestige to them equivalent to the topmost administrative assignments. Scholars do not generally covet administrative jobs. Universities under the present dispensation do not acknowledge this aspect of the issue. Governance questions are vitally linked to these aspects, at present left to look after themselves. To add to this, politicization on a large scale has seen to it that brilliant people are sidetracked in preference being bestowed on lower grade scholars, even

plagiarists, either because of political connections or even other reasons. Many teachers with excellent academic record are known to have felt frustrated for long. One may cite the example of Delhi University where a scholar of the repute of Dr Tapan Roy Chowdhury, an Oxonian, had to leave Delhi University with a feeling of total frustration – many of his juniors became full Professors but promotion eluded him for long, He left Delhi University to finally become Professor of History at the University of Oxford. His hurt feelings have been recorded in his Bengali book entitled *Bangalnama*. Many such instances can be cited with reference to other universities also. The very concept of corporate governance gets a jolt when such things happen. Many such appointments were made during the left regime in West Bengal Universities with unsophisticated wiles! Corporate governance has a much wider connotation than what has been made of it in the context of large scale, numerous instances of corporate deviance. As a reactive measure, corporate governance has failed to deliver blatantly. Achievements are also considered ex-officio; unless the boss's name figures among achievers, no recognition ensues. A refreshing wind of change has been blowing over the sky of Dibrugarh University which, I am sure, will have a lasting impact!

Negative Rewards Galore

Indeed, many of these items would be of considerable relevance to Universities and other non-profit organizations in general and the list would be long. In the Universities several pay hikes have made the jobs of Professors and other senior non-teaching staff highly attractive so that some extra work on their part may not create hurt feelings, according as the UGC directives in this behalf indicate. On the part of companies each of the aforesaid points carries a weight not always appreciated. On the other hand, our college and University tradition has experienced many teachers and Professors who set example by sheer merit of their research and teaching at remunerations considered pittance by the current standards. The ideals that the profession of teaching and research carry can hardly be weighed in monetary terms. On the other hand, non-recognition of talent, novel research findings and other academic works has added frustration as an unwelcome addendum. Dr Subhas Mukhopadhyay was handed a negative reward for his work on artificial simulation of pregnancy, with quite a few of his predecessors and followers who were denied recognition of their original work in different fields. He greeted his highly original experiments with a suicide. His recognition as the father of artificial fertilization came years after his untimely demise. Large scale export of our scholars are an indication of the type of treatment that our scholars receive in general. The large exodus of brilliant men and women, gaining high prominence abroad, several of them Nobel Laureates, is not without reason. It is really not for

nothing that it is said that rules and regulations that are put into use are meant for the mediocre. All these actually underline the most of the systems in vogue before the UGC regime were perhaps better. While the expressional abilities were given prominence earlier, the prevalent system has made fun of them. But the governance tenets do not have any say in all this. Americanization of the education system has already done more harm than good. In the USA most of the 'A' grade universities has a large number of teachers, professors and research scholars whose basic education was in India! One remembers what Sir Ashutosh Mukherjee said in the olden days of his vice-chancellorship of Calcutta University when an Oxonian aspirant for a teaching job in the University wrote '*Yours Truly*' in his application, that the University of Calcutta taught better English than Oxford! Unfortunately those glorious days are gone. The primary job of a University is to teach but this has become a fault line in many a case. Governance ideals applicable to a University can hardly undermine or ignore this. Quality of teaching has in the meantime slid down hill, teachers of the olden days have already become a forgotten community. And we talk of governance of the Universities without any respect for teaching and research - about the latter, the incidence of plagiarism has become rampant in all disciplines, almost in all countries. Where is the community of teachers who would not mind staying at the University cubicle till at dead of night, forgetting hunger or sleep! The required innate capabilities of a teacher have become a rather lost virtue. Time, we calculated the cost-benefits of the virtues of reading, writing and researching, maybe even with the assistance of computers. The aims of education should call for our serious attention even at this fag end of the day. Thinking of Corporate Governance in the context of streamlining business operations and seeking its parallel in the academia in effect push us to appreciate what W. H. Auden stated by way of a quotation from *Punch* in his inaugural speech while occupying the Chair of English Poetry at the University of Oxford, published later as a pamphlet under the title, '*Making, Knowing and Judging English Poetry*':

Two English Examiners were having a stroll in the evening when one of them uttered:

Oh Cuckoo! Shall I call thee bird or but a wandering voice?

The other retorted: State the alternative preferred with reasons for your choice!

It may be appreciated that this is what we teach and study what we call the *New Science of Decision Making a la* Herbert A. Simon. The poetic touch puts away the nitty-gritty of the decision making processes that constitute a major plank of management studies and in fact places a sugar coating on a major headache of all managers! Our management literature does not care about these tit bits but it is not appreciated that perhaps a tinge of literature could

have made our process of learning a lot more interesting getting into us by the shortest route of appreciation. Alas! Who is to teach whom! A manager's, teacher's, accountant's or engineer's mindset would have been a lot more interesting if he inculcated the virtue of 'appreciation', on the wane all this while. We have become rather prosaic in the processes of our learning various arts and the sciences. Governance ideals would have found a more meaningful alternative than making our education verily lip-deep. The old-timers may have found the whole process of transformation through which we have been passing rather blunt and ditzy. Education, to be worth the name, in all its various ramifications should have made us wiser rather than merely being informed.

Main Components of Corporate Governance

Away from all those pointers, the main components of corporate governance are three, if one were to sidetrack all the tall references about what constitutes the key elements of corporate governance. One, Independent Chairman of the Board of Directors; the Vice-Chancellor of a University is already one such entity as he come with a whole series of fresh ideas and outlook. If he is allowed to function as a true team-leader, he can do wonders! Signs of all this are writ large on the Coffee House of the University of Dibrugarh as an example. The newly-built Coffee House in the campus of Dibrugarh University bespeaks the efforts of the authorities of the University to bring students and teachers of different intellectual disciplines in what Rabindra Nath said 'the bosom of one light'. The architectonic structure itself is a pleasing sight; add to this the quality of discussions on different issues of current significance, raging differences of opinion and waiting for \ on consensus, and one gets an atmosphere of differences leading to an agreement. Differences, debates and consensus are three facets of any group effort, so much relevant in management that many large organizations have had *ideation* processes as major planks of the planning for significant activities in future. And one does not have to look for an independent outsider for this purpose, the Vice-Chancellor easily fills in. The context of independent director, as the second issue of corporate governance is not relevant because the teachers themselves are free to agree or disagree on a given issue depending on whether a decision would benefit the University or otherwise; for, the innate strength of a teacher lies in his scholarship and his reputation as a teacher and scholar. Deviations from such a standpoint can be caused by political interference leading to appointments in high offices sidetracking better candidates for the job. The third issue of corporate governance concerns the constitution of *audit committees*. This issue is also not very significant because university audits are conducted by

the government appointed auditors, namely, Accountant General. Apart from audit, the budgetary exercises of universities call for some discrete approaches, for the budgets usually prepared do not respond sensitively to the developmental requirements. The usual university budgets are what may be termed as *incremental budgets* which rest with making small changes here and there, as against provisions made earlier. For an up and coming organization like a university, budget types may be more than one. Apart from the usual budgets, universities may consider several other types such as:

- a.) Discrete capital budgets involving adequate provisions for architectonic buildings, playgrounds, swimming pools, roads and communication systems within the campus;
- b.) Performance budgets on the basis of proposals either framed by the departments or by the vice-chancellor so that the right ambiance may be created for better teaching and research;
- c.) Zero-base budgeting for laboratories, teachers' rooms that could accommodate at least 12-15 students fitted with PC, black boards and proper lighting arrangements;
- d.) Outcome budgeting involving outside assignments, research projects, etc.;
- e.) Spatial budgeting for uplift of the vicinage of the university campus utilizing the available expertise in different departments and faculties for making the campus more liveable and lovable by way of planned expenditure on larger number of fruit-bearing trees – maybe by way of grafting, plants bearing different seasonal flowers as also different varieties of shrubs noted for their fragrance and/or medicinal qualities; and
- f.) Detailed variance analysis implies showing areas of divergence from the targets, reasons therefor, pinpointing responsibilities for results while underlining issues like supervening impossibility or any other significant factor not quite anticipated at the time of fixing targets. Variance analyses lend meaning to budgetary exercises while all the aforesaid details together provide insight for making such exercises regular and systematic. Seriousness of purpose and implementation of the findings are primary requirements.

N.B. *Estimates in all these cases would have to guarantee that they are based on rational considerations and do not turn out to be mere guesstimates and that the targets set are reasonable, not being riddled by either under- or over-estimates and are attainable with reasonable efforts.*

Universities, Central and State: Audit Context

The audit traditions followed in the universities are traditional, propriety audit and scrutiny and comments are primarily oriented towards assessment of variances from the estimates

with comments on reasons for deviations. However, a university with abundance of necessary techno-financial knowledge has got to extend the definition of audit to include ‘regular and systematic review and appraisal of the factors and forces that contribute to the realization of the goals set for a particular period’. This extended and more comprehensive definition embraces decision audit, gestation audit, performance audit and technical audit that seek to ensure that efforts achieve the money’s worth, of course taking into view that since the future cannot be accurately anticipated when the future is deep, the reasons for variance could be traced and duly ascribed. The motto here is that the money’s worth should be realized and no effort should be spared to ensure that. Even the budgets and the decisions can be juxtaposed to ascertain what is what. No small job, this! But the universities in their various departments and faculties do have the necessary expertise to make the best of the situation. Separate audits are required for the money received from the UGC or other sources that require discrete audit exercises and certification. For all this, the universities can constitute audit committees to unfold the nature and character of the funds spent *vis a vis* the results achieved. Depending on the nature of the tasks and responsibilities, members from different cognate departments can be drafted for effectively judging the technicalities of the tasks involved and the appropriateness of the expenditure as against the tasks to be performed. The VC should not be a party to any of these but he should oversee that things are on the rail. A degree of objectivity is an essential aspect of such exercises especially to ensure that no bad name results from any of these exercises. Our focus on corporate governance closes with the accordance of recognition and observation that the universities have all the necessary expertise, and even the willingness to make the proposition worth the name. The only requirement is to organize, mobilize resources and act in this behalf. What has come in the way all this while is a lack of seriousness towards getting results, subject to the dictum: ‘inevitability of gradualness’ rather than forcing the pace.

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EXPLORING RESPONDENTS' PERCEPTIONS ON STATUTORY AUDITORS' ETHICAL ROLE

Dr. Siddhartha Sankar Saha¹

Abstract

Statutory auditors have certain responsibility towards investors as well as other stakeholders as they are social members. In accounting profession, competence and good character is necessary to serve such responsibility. Ethical courses, codes and corporate social guidelines in accounting profession are framed to achieve ethical reasoning and bring justice to the stakeholders. Sometimes technical expertise of the statutory auditor is wrongly perceived to be competence in resolving the auditing complexities. Basically, accounting profession is mostly governed with compliance to ethical standard provided under professional code of conduct and disciplinary action due to non-compliance. Ethical status may play an important role to construe moral character of the individual before entering the profession. After recent scams, the situations are changing and researchers are giving more importance on ethical education to ensure moral development within profession. However, accountants should be more value oriented than ethical ruling guided by Professional Body. They should perform their job in safeguarding the interest of stakeholders and perform their rights in favour of them. In this backdrop, the paper makes an attempt to analyse opinions of 477 respondents to each statement on 'statutory auditors' ethical role in the backdrop of corporate accounting scandal' based on occupation of respondents. However, the main objectives of the paper are to :(a) analyse homogeneity of opinions between respondents belonging to the occupation for select variables under the study; (b) explore significant difference of opinion among occupational groups for select variables.

Keywords: Statutory Auditors; Ethical Role; Corporate Accounting Scandal; Likert 5 Point Scale.

Introduction

Statutory auditors have certain responsibility towards investors as well as other stakeholders as they are social members. In accounting profession, competence and good character is necessary to serve such responsibility (Claypool, 1990). Ethical courses, codes and corporate social guidelines in accounting profession are framed to achieve ethical reasoning and bring justice to the stakeholders. Sometimes technical expertise of the statutory auditor is wrongly perceived to be competence in resolving the auditing complexities (Gill, 2011). Practically, they are supposed to be competent to apply ethical and moral judgment to resolve ethical dilemmas. They are biased towards particular set

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of values which is provided by professional code. Professional code fails to resolve day to day ethical dilemmas that they face in everyday work. The conflicts of rights between statutory auditor and their clients and political independence of statutory auditors have also not given importance in present rules on independence. Emphasis on this issue has also not been given under accounting profession. Basically, accounting profession is mostly governed with compliance to ethical standard provided under professional code of conduct and disciplinary action due to non-compliance. Ethnic status may play an important role to construe moral character of the individual before entering the profession. After recent scams, the situations are changing and researchers are giving more importance on ethical education to ensure moral development within profession. However, accountants should be more value oriented than ethical ruling guided by Professional Body. They should perform their job in safeguarding the interest of stakeholders and perform their rights in favour of them. Religious maxims often set course of action for the statutory auditor in a better manner. All the professional qualification for being a certified accountant requires extensive study on ethics in operation. Truly speaking, ethical orientation of accounting students and practitioners are not sufficient in the era of recent accounting scandals. Accountants are taught under neo-classical economic system where maximization of efficiency and shareholders' wealth is the primary concern of the corporations and accountants are only interested towards financial impact of an event on profit (Mayper, 2005).

Past Studies

Bhattacharya (2001) in his study "*Ethics in corporate financial reporting*" highlights the need of ethical disclosure in corporate financial reporting. According to him, financial reporting is a communication between Board of Directors and stakeholders on financial health of the company. Using flexibility in accounting principles, financial reports are sometimes manipulated to meet market expectation and increase shareholders worth. Blake, Bond, Amat, Oliveras (2000) in their study "*The ethics of Creative Accounting – Some Spanish evidence*" put forth the concept of creative accounting in different nations. Accounting regulators and big four audit firms face great deal of ethical dilemma with regard to creative accounting as it is not illegal in many countries and used to manage earnings. Chakrabarti (1996) in his study "*Ethics in the era of scam*" makes a glowing discussion on crime and criminality. He classified crimes into blue collar and white collar crimes and discussed the types of white collar crimes. He also defines professional and responsibility of a professional in white collar crime. According to him, corruption occurs due to centralization of power. As a measure solution, he proposed decentralisation of power and punitive action against those using power with wrong intentions. Chauhan & Gupta (2007) in their study "*Ethical Audit: Stakeholders Perspective*" proves being morally right rather than being legally right give immense satisfaction to any individual which can not be valued in monetary terms. So, according to the authors, ethics has immense importance in taking business decision and conducting audit procedures. The authors also present a framework of ethical audit in the organisation which should be accepted all over the world subject to local societal differences. Copeland (2004) in his study "*Ethics as an Imperative*" analyses ethical failure of accounting professionals in the backdrop of recent scandals. According to him, degraded family

values, culture and moral sense are main reason behind recent ethical collapse. It can only be restored if accounting regulators, business, big four audit firms and academic institutes work hand in hand and develop a moral framework for accountants and statutory auditors. Curtis (2008) in his study "*Legal and regulatory environments and ethics: essential components of fraud and forensic accounting curriculum*", specifies how criminology and law, legal and regulatory environment and ethics can be included in a model curriculum for major, minor or certificate course in forensic accounting. Das (2006) in his study "*Ethics in Governance Practice of Corporate- Some issues and implications*" highlights different ethical values and principles and their implication in corporate governance. According to the author, presently different financial techniques are used by the corporate entity to breach ethical guidelines. In order to increase vigilance over the ethical practice, the author proposed increased responsibility of government, regulatory authority and internal mechanism. Duska, Duska & Ragatz (2011) in their book "*Accounting Ethics*", unearthed the concept of accounting ethics after discussing in brief development of ethical concepts proposed by ethical proponents. They describe the impact of ethics in improving independence of statutory auditors and responsibility of an accounting firms in a corporate accounting scam. Earley, & Kelly (2004) in their study "*A note on ethics educational interventions in an undergraduate auditing course: Is there an Enron effect?*" describe several different educational interventions in the undergraduate auditing course using different scores (e.g. Accounting Ethical Dilemma Instrument and Defining Issue Test score). Moral reasoning of the students is tested in two semesters in pre -and post -Enron period using these scores. But no significant difference in their scores was found.

Objectives

The paper makes an attempt to analyse opinions of 477 respondents to each statement on 'statutory auditors' ethical role in the backdrop of corporate accounting scandal' based on occupation of respondents. However, the following are main objectives of the paper:

- (i) Analysing homogeneity of opinions between respondents belonging to the occupation for select variables under the study;
- (ii) Analysing Significant Difference of Opinion among Occupational Groups for select variables.

Research Methodology

This paper is based on primary data collected from 477 respondents with age ranging from 20 to 80 having sufficient knowledge and working experience in the field of ethical responsibility of statutory auditors. The geographical area where the survey is conducted is Kolkata district in the State of West Bengal and the time period for survey is June, 2015 to December, 2015. Respondents included from different occupational categories are: Academicians; Students; Chartered Accountants (CAs); Cost and Management Accountant (CMAs) and Investors. The Population size under each category of respondent is infinite and indeterminable. Based on resource and time constraint, an initial sample of 150 from each respondent category from Academicians; Students; Chartered Accountants (CAs); Cost and Management Accountant (CMAs) and an initial sample of 100 from the Investor category have

been selected based on convenience sampling technique. The primary data has been collected from aforesaid respondents in a pre-tested, close ended, structured questionnaire containing few statements (select variables under the study). The questionnaire is designed on a 'Likert' 5 point scale where different points indicate different degrees of agreement with a statement incorporated under the questionnaire [1: Strongly Disagree (SD); 2: Disagree (D); 3: Neutral (N); 4: Agree (A); and 5: Strongly Agree (SA)] (Kothari, 2010). Out of 150 initial sample set for academicians, CA, CMAs and Students, 111 valid responses are collected from academicians, 101 valid responses are collected from CAs, 94 valid responses are collected from CMAs and 118 valid responses are collected from students. An initial sample of 100 was set for investor category. Only 53 valid responses were collected from them. Analytical tools used to fulfil the aforesaid empirical objectives are:

Objectives	Analytical Tools
Analysing homogeneity of opinions between respondents belonging to the occupation for select variables under the study	◆ Chi-Square Test of Homogeneity
Analysing Significant Difference of Opinion among Occupational Groups for select variables	◆ One Way Analysis of Variance (ANOVA)

Results of the aforesaid analysis are critically examined to draw suitable conclusions on statutory auditors' ethical role.

Variables considered for Structured Questionnaire based Survey

Issues on which opinions of respondents are collected as follows:

Variable Code	Variables Selected
	Dependent Variable
V ₁	Statutory auditors' ethical role in the backdrop of corporate accounting scandal
	Independent Variables
V ₂	Focus on ethics beyond principles and rules due to recent scams;
V ₃	Sufficiency of auditing standards;
V ₄	Increased enforcement of ethical code;
V ₅	Punitive action;
V ₆	More focus on moral ethics by statutory auditors;
V ₇	ICAI's role to focus on moral ethics
V ₈	Need to ethical education;
V ₉	Inclusion of values and ethics in curriculum of professional courses;
V ₁₀	Restoration of ethical behaviour of statutory auditors;
V ₁₁	Need of awareness program by ICAI;
V ₁₂	Mandatory orientation program in collaboration with academics;
V ₁₃	Need for practical training on moral ethics;
V ₁₄	Rewarding statutory auditors for ethical behaviour.

Measuring Reliability of Scale (*Chronbach's α*)

In case of internally consistent reliable scale, all the scale items would convey the same meaning as that of the scale. Chronbach's α is used to measure internal consistency reliability (Chronbach, 1951). If the value of this α is more than 0.6, it can be reasonably concluded that the scale is internally consistent and reliable (Nunnally¹⁹⁷⁸). With a view to measuring reliability of the scale containing aforesaid variables, Chronbach's α is calculated at 0.754 in the present study which is more than threshold limit of 0.6. Therefore, it can be concluded that the scale items that have an effect on 'Ethical Responsibility of Statutory Auditors' are internally consistent and reliable.

Reliability Statistics		
<i>Cronbach's Alpha</i>	<i>Cronbach's Alpha Based on Standardized Items</i>	<i>N of Items</i>
0.754	0.775	16

(Source: Compilation of Field Survey Data using SPSS 17.0)

Analysis & Discussion

(i) *Analysing homogeneity of opinions of 5 different occupations (CAs, CMAs, Academicians, Students and Investors) using Chi-Square Test of Homogeneity*

In this present research, sample respondents are selected based on their occupation. As the study is related to 'ethical responsibility of statutory auditors', professionals like CAs and CMAs who are directly related to the practice of statutory audit are selected. Apart from them, academicians and students representing academic fraternity are also considered to have research oriented view on the topic. Finally investors, the main aggrieved party to corporate accounting scams in the backdrop of which the whole study is set is selected as one class of respondents. Naturally, it is an important objective to statistically analyse the homogeneity of opinions of 5 different occupations (CAs, CMAs, Academicians, Students and Investors) using Chi-Square Test of Homogeneity.

With a view to statistically analysing homogeneity of opinions between respondents belonging to the occupation for select variables under study, Chi-Square test of homogeneity is conducted with the help of statistical package (SPSS 17.0). To test the hypothesis adopted, Chi-Square test of homogeneity is conducted with sample respondents for each categorical variable. Degree of freedom (DF) for the test is 16 and significance level is decided at 5%. Test result obtained for each of the categorical variable is plotted in the following table. Now, before conducting the test, a null and alternate hypothesis is set.

(a) *Hypothesis with regard to population categories segregated based on Occupations*

- ◆ Ho: Opinions of 5 different occupations (CAs, CMAs, Academicians, Students and Investors) are homogenous with respect to each categorical variable
- ◆ H₁: Opinions of 5 different occupations (CAs, CMAs, Academicians, Students and Investors) are not homogenous

Table-1

Variable Code	Variable	Chi-Square Value (χ^2)	P-Value	Decision Rule	Decision on H_0	Findings
V ₂	Focus on ethics beyond principles and rules	53.156	.000	P value < 0.05	<i>Rejected</i>	Five different occupations (CAs, CMAs, Academicians, Students and Investors) are not homogenous in their opinion with respect to the fact that focuses on ethics beyond principles and rules have become recent phenomena in the advent of corporate accounting scam.
V ₃	Sufficiency of auditing standards	93.667	.000	P value < 0.05	<i>Rejected</i>	Opinions of five different occupations are not homogenous with respect to this statement.
V ₄	Increased enforcement of ethical code	50.049	.000	P value < 0.05	<i>Rejected</i>	In case of this statement, opinions of five different occupations are not homogenous.
V ₅	Punitive action	49.336	.000	P value < 0.05	<i>Rejected</i>	Opinions of five different occupations are not homogenous with respect to this statement stating that punitive action can bring back ethical responsibility of the statutory auditors.
V ₆	More focus on moral ethics by SA	33.202	.007	P value < 0.05	<i>Rejected</i>	Opinions of five different occupations are not homogenous with respect to this statement.
V ₇	ICAI's role to focus on moral ethics	20.405	.203	P value > 0.05	<i>Accepted</i>	According to homogenous opinions of five different occupations, it can be stated that the ICAI can play an important role to improve ethical responsibility of statutory auditors by focussing on their moral ethics.
V ₈	Need for ethical education	21.677	.154	P value > 0.05	<i>Accepted</i>	Opinions of five different occupations are homogenous with respect to this statement.
V ₉	Inclusion of values and ethics in curriculum of professional courses	27.882	.033	P value < 0.05	<i>Rejected</i>	In case of this statement, opinions of five different occupations are not homogenous.
V ₁₀	Restoration of ethical behaviour of SA	21.616	.156	P value > 0.05	<i>Accepted</i>	In case of this statement, opinions of five different occupations are homogenous.
V ₁₁	Need of awareness program by ICAI	30.601	.015	P value < 0.05	<i>Rejected</i>	Opinions of five different occupations are not homogenous with respect to this statement stating that awareness program conducted by the ICAI can improve ethical responsibility of statutory auditors.
V ₁₂	Mandatory	32.142	.010	P value < 0.05	<i>Rejected</i>	Opinions of five different occupations are

	orientation program in collaboration with academics			0.05		not homogenous with respect to this statement.
V ₁₃	Need for practical training on moral ethics	40.310	.001	P value < 0.05	Rejected	Opinions of five different occupations are also not homogenous with respect to this statement
V ₁₄	Rewarding statutory auditors for ethical behaviour	100.027	.000	P value < 0.05	Rejected	In case of this statement, opinions of five different occupations are not homogenous.

(Source: Compilation of Primary data using SPSS 17.0)

(ii) Analysing Significant Difference of Opinion among Occupational Groups for select variables using One Way Analysis of Variance (ANOVA)

In this section, an attempt has been made to test divergence of opinion among respondents of 5 occupational categories for the select variables. In order to do so, average score of each occupational category for each variable is calculated.

⇒ Average score for each variable = $\sum \text{Individual scores of the respondents from a particular category} / \text{Number of respondents in that category}$

Now, mean for each occupational categories is calculated for each variable out of their average score. In order to test divergence of opinion among occupational categories for select variables and identifying impact of occupation on the opinion of respondents on impact of variables, there is a need to set following hypothesis:

Hypothesis 1

- **H₀ = No significant difference in opinion exist among occupational categories for the select variables.** [This is possible only if population mean of occupational categories are equal for the select variable ($\mu_{Academician} = \mu_{CA} = \mu_{CMA} = \mu_{Students} = \mu_{Investors}$)]
- **H₁ = Significant difference in opinion exist among occupational categories for the select variables.** [This is possible only if any of the above equality does not hold.]

Hence, with a view to testing above hypothesis, parametric one way ANOVA is applied subject to fulfilment of following 3 assumptions.

Assumptions for One Way ANOVA

No.	Assumptions	Statistical Test Used	Decision Criteria	Result	Fulfilment of Assumption
1	Independent variable should have three or more categorical levels	None	Occupational Groups should be more than 3	There are 5 occupational groups	Satisfied
2	Dependent variables are normally distributed or approximately normally distributed for each category of the independent variable	Kolmogorov-Smirnov (K-S) Test	P-Value should be more than 0.05 for each occupational category for all variables.	P-Values of all variables, are more than 0.05	Satisfied and DVs are normally distributed.

3	Variances of the population groups should be homogenous	Levene's Test	P-Value for each factor should be more than 0.05	P-Values of all variables, are more than 0.05	satisfied
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Results and Interpretation of One Way ANOVA

It is observed that all assumptions for conducting One Way ANOVA are fulfilled. However, one way ANOVA is conducted taking all the variables under consideration. Result obtained from conducting one way ANOVA from all the variables are plotted under the following table.

Table 2
Test Result under One Way ANOVA for select variables

Variable Code	Variables		Sum of Squares (SS)	DF	Mean Square (MS)	F	P Value	Decision Rule	Decision on H ₀
V ₂	Focus on ethics beyond principles and rules due to recent CAS	Between Groups	22.484	4	5.621	8.207	.000	P Value<0.05	Rejected
		Within Groups	323.282	472	.685				
		Total	345.765	476					
V ₃	Sufficiency of auditing standard	Between Groups	55.248	4	13.812	12.015	.000	P Value<0.05	Rejected
		Within Groups	542.606	472	1.150				
		Total	597.853	476					
V ₄	Increased enforcement of ethical code	Between Groups	26.869	4	6.717	9.019	.000	P Value<0.05	Rejected
		Within Groups	351.525	472	.745				
		Total	378.394	476					
V ₅	punitive action	Between Groups	22.338	4	5.585	6.792	.000	P Value<0.05	Rejected
		Within Groups	388.094	472	.822				
		Total	410.432	476					
V ₆	More focus of moral ethics by SA	Between Groups	7.235	4	1.809	2.108	.079	P Value>0.05	Accepted
		Within Groups	405.096	472	.858				
		Total	412.331	476					
V ₇	ICAI'S role to focus on moral ethics	Between Groups	8.197	4	2.049	2.591	.036	P Value<0.05	Rejected
		Within Groups	373.229	472	.791				
		Total	381.426	476					
V ₈	Need of ethical education	Between Groups	4.930	4	1.232	1.755	.137	P Value>0.05	Accepted
		Within Groups	331.376	472	.702				
		Total	336.306	476					
V ₉	Inclusion of values and ethics in curriculum of professional courses	Between Groups	5.825	4	1.456	1.867	.115	P Value>0.05	Accepted
		Within Groups	368.066	472	.780				
		Total	373.891	476					
V ₁₀	Restoration of ethical	Between Groups	2.522	4	.631	.982	.417	P Value>0.05	Accepted
		Within Groups	302.953	472	.642				

	behaviour of SA	Total	305.476	476						
V ₁₁	Need awareness program by ICAI	Between Groups	7.851	4	1.963	2.903	.022	P Value<0.05	Rejected	
		Within Groups	319.134	472	.676					
		Total	326.985	476						
V ₁₂	Mandatory orientation program in collaboration with academics	Between Groups	15.953	4	3.988	5.168	.000	P Value<0.05	Rejected	
		Within Groups	364.236	472	.772					
		Total	380.189	476						
V ₁₃	Need for practical training on moral ethics	Between Groups	15.623	4	3.906	5.303	.000	P Value<0.05	Rejected	
		Within Groups	347.622	472	.736					
		Total	363.245	476						
V ₁₄	Rewarding statutory auditors for ethical behaviour	Between Groups	95.059	4	23.765	20.185	.000	P Value<0.05	Rejected	
		Within Groups	555.696	472	1.177					
		Total	650.755	476						
		Within Groups	454.452	472	.963					
		Total	555.778	476						

(Source: Compilation of Primary data using SPSS 17.0)

Inferences

In Table 2, test statistic F is the ratio of Between Group Mean Square (MS_{Between}) and Within Group Mean Square (MS_{Within}). MS_{Between} and MS_{Within} are obtained by dividing Between Group Sum of Square (SS_{Between}) and Within Group Sum of Square (SS_{Within}) by their respective Degrees of Freedom (DF). At 5% level of significance, if probability of F is less than 0.05, H_0 is rejected and vice versa. Now, test result shown under Table 2 is interpreted for each individual variable.

Variable Code	Variables	Hypothesis	Findings
V ₂	Focus on ethics beyond principles and rules due to recent scams	<p>H_0: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of 'Focus on ethics beyond principles and rules due to recent scams' on 'Statutory Auditors' Ethical Role'.</p> <p>H_1: Any of the above equality does not hold (i.e. there is significant divergence of opinion among 5 categories of respondents for this factor).</p>	<ul style="list-style-type: none"> ◆ Test statistics (F) calculated in table 2 is 8.207. At (4, 472) degrees of freedom in the F distribution table, this F value shows a p-value equals to .000 which is less than significance level .05. From this result it can be inferred that H_0 is rejected and H_1 is accepted. ◆ So, there is a significant difference in the opinion of respondents on impact of 'Focus on ethics beyond principles and rules due to recent scams' on 'Statutory Auditors' Ethical Role'.
V ₃	Sufficiency of auditing standards	<p>H_0: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of 'Sufficiency of</p>	<ul style="list-style-type: none"> ◆ Test statistics (F) value is 12.015. At (4, 472) degrees of freedom in the F distribution table, this F value shows a p-value equals to .000 which is less than significance level .05. From this result it

		<p><i>auditing standards' on 'Statutory Auditors' Ethical Role'.</i></p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<p>can be inferred that Ho is rejected and H₁ is accepted.</p> <p>◆ So, there is a significant difference in the opinion of respondents on impact of 'Focus on ethics beyond principles and rules due to recent scams' on 'Statutory Auditors' Ethical Role'.</p>
V ₄	Increased enforcement of ethical code	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of 'Increased enforcement of ethical code' on 'Statutory Auditors' Ethical Role'.</i></p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<p>◆ At (4, 472) degrees of freedom in the F distribution table, F value (9.019) shows a p-value equals to .000 which is less than significance level .05. Hence, it can be inferred that Ho is rejected and H₁ is accepted.</p> <p>◆ So, there is a significant difference in the opinion of respondents on impact of 'Increased enforcement of ethical code' on 'Statutory Auditors' Ethical Role'.</p>
V ₅	Punitive action	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of 'Punitive action' on 'Statutory Auditors' Ethical Role'.</i></p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<p>◆ At (4, 472) degrees of freedom in the F distribution table, F value shows a p-value equals to .000 which is less than significance level .05. It can be inferred that Ho is rejected and H₁ is accepted.</p> <p>◆ So, there is a significant difference in the opinion of respondents on impact of 'Punitive action' on 'Statutory Auditors' Ethical Role'.</p>
V ₆	More focus on moral ethics by statutory auditors	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of 'More focus on moral ethics by statutory auditors' on 'Statutory Auditors' Ethical Role'.</i></p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<p>◆ At (4, 472) degrees of freedom in the F distribution table, p-value equals to .079 which is more than significance level .05. Hence, Ho is accepted and H₁ is rejected.</p> <p>◆ So, there is no significant difference in the opinion of respondents on impact of 'More focus on moral ethics by statutory auditors' on 'Statutory Auditors' Ethical Role'.</p>
V ₇	ICAI'S role to focus on moral ethics	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of 'ICAI'S role to focus on moral ethics' on 'Statutory Auditors' Ethical Role'.</i></p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<p>◆ P-value (.036) is less than significance level .05. Hence, Ho is rejected and H₁ is accepted.</p> <p>◆ So, there is a significant difference in the opinion of respondents on impact of 'ICAI'S role to focus on moral ethics' on 'Statutory Auditors' Ethical Role'.</p>
V ₈	Need to ethical education	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of 'Need to ethical education' on 'Statutory Auditors' Ethical Role'.</i></p>	<p>◆ At (4, 472) degrees of freedom in the F distribution table, F value shows a p-value equals to .137 which is more than significance level .05. Thus, Ho is accepted and H₁ is rejected.</p> <p>◆ So, there is no significant difference in</p>

		<p><i>Ethical Role</i>’.</p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<p>the opinion of respondents on impact of ‘Need to ethical education’ on ‘Statutory Auditors’ Ethical Role’.</p>
V₉	Inclusion of values and ethics in curriculum of professional courses	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of ‘Inclusion of values and ethics in curriculum of professional courses’ on ‘Statutory Auditors’ Ethical Role</i>’.</p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<ul style="list-style-type: none"> ◆ P-value equals to .115 which is higher than significance level .05. From this result it can be inferred that Ho is accepted and H₁ is rejected. ◆ So, there is no significant difference in the opinion of respondents on impact of ‘Inclusion of values and ethics in curriculum of professional courses’ on ‘Statutory Auditors’ Ethical Role’.
V₁₀	Restoration of ethical behaviour of statutory auditors	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of ‘Restoration of ethical behaviour of statutory auditors’ on ‘Statutory Auditors’ Ethical Role</i>’.</p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<ul style="list-style-type: none"> ◆ P-value equals to .417 which is more than significance level .05. Hence, Ho is accepted and H₁ is rejected. ◆ So, there is no significant difference in the opinion of respondents on impact of ‘Restoration of ethical behaviour of statutory auditors’ on ‘Statutory Auditors’ Ethical Role’.
V₁₁	Need of awareness program by the ICAI	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of ‘Need of awareness program by the ICAI’ on ‘Statutory Auditors’ Ethical Role</i>’.</p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<ul style="list-style-type: none"> ◆ P-value equals to .022 which is less than significance level .05. From this result it can be inferred that Ho is rejected and H₁ is accepted. ◆ So, there is a significant difference in the opinion of respondents on impact of ‘Need of awareness program by the ICAI’ on ‘Statutory Auditors’ Ethical Role’.
V₁₂	Mandatory orientation program in collaboration with academics	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of ‘Mandatory orientation program in collaboration with academics’ on ‘Statutory Auditors’ Ethical Role</i>’.</p> <p><i>H₁: Any of the above equality does not hold.</i></p>	<ul style="list-style-type: none"> ◆ At (4, 472) degrees of freedom in the F distribution table, this F value shows a p-value equals to .000 which is less than significance level .05. From this result it can be inferred that Ho is rejected and H₁ is accepted. ◆ So, there is a significant difference in the opinion of respondents on impact of ‘Mandatory orientation program in collaboration with academics’ on ‘Statutory Auditors’ Ethical Role’.
V₁₃	Need for practical training on moral ethics	<p><i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of ‘Need for practical</i></p>	<ul style="list-style-type: none"> ◆ P-value equals to .000 which is less than significance level .05. Thus, Ho is rejected and H₁ is accepted. ◆ So, there is a significant difference in the opinion of respondents on impact of

		<i>training on moral ethics' on 'Statutory Auditors' Ethical Role'.</i> <i>H₁: Any of the above equality does not hold.</i>	'Need for practical training on moral ethics' on 'Statutory Auditors' Ethical Role'.
V ₁₄	Rewarding statutory auditors for ethical behaviour	<i>H₀: No significant divergence of opinion exists among 5 categories of respondents as to their opinion on impact of 'Rewarding statutory auditors for ethical behaviour' on 'Statutory Auditors' Ethical Role'.</i> <i>H₁: Any of the above equality does not hold.</i>	<ul style="list-style-type: none"> ◆ P-value equals to .000 which is less than significance level .05. From this result it can be inferred that H₀ is rejected and H₁ is accepted. ◆ So, there is a significant difference in the opinion of respondents on impact of 'Rewarding statutory auditors for ethical behaviour' on 'Statutory Auditors' Ethical Role'.

From the result, it can be finally concluded that respondents from different occupation do not think uniformly on impact of select variables on 'statutory auditors' Ethical Role' for most of the factors. There is a significant difference in their opinion for all the select variables except variables V₆, V₈, V₉, and V₁₀.

Conclusions

Opinions of respondents on ethical responsibility of statutory auditors representing 13 variables from five different occupations are analysed in this paper. Based on occupation, respondents are categorised into five groups – CAs, CMAs, Academicians, Students and Investors. After the Chi-Square Test of Homogeneity, it is observed that population from five different occupation are homogenous in their opinion for 'ICAI's role to focus on moral ethics', 'need for ethical education' and 'restoration of ethical behaviour by SA'. For rest of the variables, respondents' categories are not homogenous in their opinion. One way ANOVA result reveals that no divergence of opinion among population from 5 different occupational category exist for 'More focus on moral ethics by SA', 'Need for ethical education', 'Inclusion of values and ethics in the curriculum of professional courses' and 'Restoration of ethical behaviour by SA'. Occupation has no significant impact on respondents' perception on those variables. For rest of the other variables, significant difference in opinion exists between populations of 5 different occupational categories. However, in the scam stricken environment, auditors are becoming rule oriented and giving less importance on moral value judgments. Though ethical code does not provide them with proper guidance for taking decision, their moral value judgments may stop them in order to commit wrong action morally. Moreover, it is concluded that this is high moment to enhance the value sense in accounting as well as auditing profession in order to discharge statutory auditors' responsibility effectively.

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A COMPARATIVE STUDY ON BOARD DIVERSITY AND CORPORATE GOVERNANCE PRACTICES OF S&P BSE SENSEX COMPANIES IN INDIA

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Abstract

The corporate board diversity, mostly in the form of gender diversity, has become a dynamic and emerging area in the corporate governance domain in India especially in the wake of the new Companies Act, 2013 [Section 149(1)]. Against this backdrop, the present study has envisaged the state of affairs relating to the board diversity and the corporate governance practices of selected major listed companies in India. After studying the governance structure as well as the board diversity pattern of the S&P BSE-SENSEX companies in India, it has been found that there exists no statistically significant difference in their corporate governance disclosure practices based on the gender diversity or various parameters of board diversity like age, ethnicity and ownership pattern, etc.

Keywords: Corporate Governance, Board of Directors, Board Diversity, Gender Diversity

JEL Classification: G34, D71, J16

Introduction

Diversity, in common parlance, can be defined as the variation among people existing together in a defined employment or market setting in terms of social and cultural identities. The social and cultural identities refer to the personal affiliation with groups that, according to some researchers have significant influence on peoples' major life experiences. These affiliations include among others gender, race, national origin, religion, age cohort and work specialization (Cox, 2001). Eminent researchers like Slocum and Hellriegel (2007) have explained diversity in terms of two categories-primary and secondary. The primary categories of diversity include age, race, ethnicity, gender, etc. and the secondary categories of diversity

include education, experience, income, marital status, etc. Another group of researchers have tried to analyse diversity from two perspectives-demographic and cognitive. Demographic diversity includes gender, age, race and ethnicity and cognitive diversity includes knowledge, education, values, perceptions, affection and personality characteristics (*Maznevski, 1994; Milliken and Martins, 1996; Pelled, 1996; Boeker, 1997; Watson et al., 1998; Peterson, 2000; Timmerman, 2000*). However, diversity is not simply about having a collection of individuals who have different characteristics. It is about getting the right people for the job and harnessing their unique and individual skills and experiences in a way that collectively benefits the organisation and the business. *Carter et al., (2002)* have noted that “one of the most significant governance challenges that managers, administrators, and shareholders of the modern company face is establishing an optimal mix within the board of directors in terms of gender, race, and culture”. Increased emphasis on diversity as a criterion for board membership that emanates from differences in background, experience, gender and race will drive the board to provide the feedback necessary to make the advisory function meaningful. There have been many contemporary studies on demographic diversity and its effect on performance (*Lee and Far, 2004; Evans and Carson, 2005; Bergen and Massey, 2005*). Some researchers have even studied specifically on the impact of demographic diversity on top management team or boards of directors and its implications on firm performance (*Roberson and Park, 2007; Erhardt, et al., 2003; Certo et al., 2006; Carson, et al., 2004*). Gender diversity, a significant area of corporate board diversity, has become a dynamic and emerging area in the corporate governance domain in India, especially in the wake of the new Companies Act, 2013 [Section 149(1)]. The gender diversity in management is said to provide a number of benefits, including new ideas and improved communication (*Milliken and Martins, 1996*), insights into female market segmentation (*Daily, Certo and Dalton, 1999*), and transformational management style (*Rosener, 1990*). While the importance of women in corporate boards has been long acknowledged (*Burke, 1997; Bilimoria and Wheeler, 2000*), females have made only modest gains in terms of directorships on corporate boards (*Daily, Certo and Dalton, 1999; Arfken, Bellar and Helms, 2004*).

Against this backdrop, the present study has envisaged the state of affairs relating to the board diversity and the corporate governance practices of selected major listed companies in India.

The Upper Echelons Theory and the Diversity

Hambrick and Mason (1984) in their seminal work have proposed a theory that managerial characteristics can be used to (partially) predict organizational outcomes based on the notion

that the choices of top managers are influenced by their cognitive base and their values. Since such psychological constructs are difficult to observe, they have suggested that the demographic characteristics of top managers can be used as proxies for their cognitive base and values. That is why the relationship between observable managerial characteristics and strategic choices lies at the core of this theory. They suggest that this occurs because demographic characteristics are associated with the many cognitive bases, values, and perceptions that influence the decision making of managers. Several studies have supported the presence of relationship between upper echelon characteristics and organizational strategies and performance. For example, there is evidence that top management team's (TMT) job-related diversity is related to internationalization of firms (*Lee and Park, 2006*); TMT diversity relating to age, tenure, and education have been associated with organizational innovation (*Camelo-Ordaz, Hernandez-Lara, and Valle-Cabrera, 2005*; *Bantel and Jackson, 1989*), changes in corporate strategy (*Wiersema and Bantel, 1992*), and information use (*Dahlin, Weingart, and Hinds, 2005*); and, finally, TMT's gender diversity interacts with organizational culture and growth orientation in affecting organizational performance (*Dwyer, Richard, and Chadwick, 2003*). Hence, organizations wishing to attract, retain, and benefit from diverse talent are often advised to begin by increasing the diversity of their senior management (*Cox, 1994*; *Gelfand, Nishii, Raver, and Schneider, 2004*). Doing so has been proposed to help not only because of the signal that it sends to diverse employees about their advancement potential but also because a diverse TMT is more likely to be sensitive to the issues requiring attention for the retention and advancement of diverse employees. Thus, organizations with more diverse senior managers, are expected to adopt diversity initiatives, which help organizations attract diverse talent and also facilitate organizational functioning through more careful attention to the needs of diverse (and not just 'traditional') employees. *Baron et al. (1991)* have found that organizations with female executives achieved higher levels of gender integration throughout the organization than organizations with male executives. The diversity of the workforce is likely to be positively affected by the upper echelon diversity not only because the diverse senior managers are more likely to hire diverse people, but also because the diversity of the TMT sends important messages to the rest of the organization. The seminal papers on the Upper Echelons Theory and the related works suggest a variety of further characteristics that influence organizational outcomes significantly, like age, length of tenure, education, and experience of top managers, homogeneity of top management teams (*Naranjo-Gil and Hartmann, 2006*; *Naranjo-Gil and Hartmann, 2007b*; *Naranjo-Gil and Hartmann, 2007a*; *Naranjo-Gil et al. 2009*; *Pavlatos,*

2012; Burkert and Lueg, 2013), leadership style (Kyj and Parker, 2008; Hartmann et al., 2010; Abernethy et al., 2010), absorptive capacity (Elbashir et al., 2011; Lee et al., 2013), and ownership status of top managers (Speckbacher and Wentges, 2012), etc.

Benefits of Board Diversity

Board diversity is not simply about having a collection of members from multidimensional backgrounds. It is about making the right combination of people for the jobs and harnessing their unique and individual skills and experiences for mutual benefits of individuals and business. It may take time and effort but the companies that make this investment will, no doubt, experience the benefits a diverse board can yield.

- **Effective Decision-Making**

A board may be vulnerable to group-think when its members are homogenous (Janis, 1972). O'Conner (2003) has examined the Enron board's decision-making process following its disastrous collapse and concluded that it suffered from symptoms of group-think. One of the methods that have been suggested to prevent group-think in boardrooms is increasing diversity on boards. Studies indicate that people from different backgrounds and with different professional and life experience are likely to approach problems in different ways (Wiersema and Bantel, 1992). These have studies concluded that members of the board with diverse backgrounds bring different concerns and questions to the table and allow the board to consider a wider range of options and solutions *vis-à-vis* corporate issues. Diverse groups are also said to be less likely to take extreme positions and more likely to engage in higher quality analysis. Some studies indicate that more diverse groups encourage creativity and innovation, resulting in having a greater range of perspectives and solutions to problems. Studies have also concluded that companies that have a higher representation of women hold more meetings and have better attendance records (Adams and Ferreira, 2008). Others have concluded that female directors are more likely to strengthen the board and encourage the board to demand higher audit effort from their auditors to protect the board from risks (Gul, Srinidhi and Tsui, 2002).

- **Accessing Resources and Connections**

A board whose members are all alike may be weak in terms of connectivity with, or understanding of, customers, suppliers and the workforce. Most consumer-focused companies serve a wide variety of customers across gender, age and cultural backgrounds. However, the management of those companies is not always

representative of the customer base that it serves nor the workforce it employs. Some have argued that the leadership of an organisation should be representative of those it serves. A diverse board may find it easier to understand its customers and where future growth will come from, connect with employees as to how the company operates, and have multiple stakeholders' perspectives that highlight new opportunities or challenges for the company.

- **Managing and Mitigating Environmental, Social and Corporate Governance (ESG) Risks**

As the governing body that oversees and directs the company's affairs, the board must be able to make and also challenge strategic choices that inherently involve risk. A diverse board can play an important role in anticipating and managing risk because it will have a broader range of perspectives and professional expertise that will allow greater insights and discussion.

- **Utilizing the Talent Pool**

A low representation of certain sectors of the society (such as women and ethnic minorities) on companies' boards may demonstrate a failure to utilise the talent pool. As recent market events have demonstrated, there is increasing demand on directors to be able to assess risks and respond to financial and operational challenges. The developments in the corporate governance rules and standards are also placing significant demands on boards, such as requiring independent non-executive directors to assume greater responsibilities in various board committees and to have knowledge in areas like finance and accounting. Expanding the pool of potential directors by actively including the different sectors of the society, that are currently under-represented, may help take care of some corporate governance issues. These include inadequate availability of independent non-executive directors, some directors serving too many boards and, therefore, poor time commitment to each board, and some directors, particularly independent directors, having unusual long tenure.

- **Better Reflecting Workforce and Stakeholder Diversity**

Leading companies recognize that, to be successful, they must have access to the widest possible pool of talent and operate on the basis of a meritocracy where the best person is employed and promoted, regardless of gender, ethnicity, race, culture, age or any other variable. A board that reflects the diversity of its workforce and other stakeholders may see many potential benefits. It may be better positioned to

understand and prepare for entry in to new markets, empathize with stakeholders' preferences and concerns, improve customer loyalty, and enhance employee motivation and retention.

- **Better Reflecting Corporate Reputation, Investor Relations and Social Responsibility**

Some studies also suggest that, in some sectors, the presence of female directors and racial diversity can enhance a firm's reputation with consumers (*Brammer, Millington and Pavelin, 2009*) and improve innovation (*Miller and Triana, 2003*). Also, board diversity can convey a commitment to equal opportunity, responsiveness to diverse stakeholders, and a general message of progressive leadership, which enhances the corporation's public image (*Fairfax, 2005*). A company's board diversity is now a factor that institutional investors consider before investing in the company. Having a homogenous board may send the wrong signals to investors and consumers regarding the company's recruitment and management strategy, including policy on equal opportunity for employment (*Protiviti, 2011*).

- **Signaling a more Progressive Company**

Boards should set the tone at the top. By working proactively to improve diversity and aligning with international practices and standards, a board can set the benchmark for diversity at all levels of the company. Employee recruitment and performance assessment should be based on merit. A diverse board sends a clear message that the organisation is committed to equal opportunity and, as such, is more likely to attract and retain the best people. While the correlation is not clear to the researchers on this point, board diversity may indicate a greater focus on corporate governance and may convince the stakeholders that the company is doing well (*Catalyst, 2007*). Visible compliance with international standards and awards given by reputed organisations to the companies that perform well in terms of diversity may also improve public perception.

Gender Diversity in Board

In common parlance, gender diversity stands for the distinction between the physical characteristics that identify one either as male or female or even both and the individual sense of being either man or women or even both. But the term is generally used to identify the rise of pink collar employees in an organisational set up at various levels with different capacities. Although women are joining the labour force in increasing numbers around the world

(*Economist*, 2006), they remain proportionately underrepresented in the top echelon of management (*ILO*, 2004). In particular, the lack of female representation on corporate boards of directors is a global phenomenon. Women comprise less than 15 percent of the corporate board members in the USA, the UK, Canada, Australia and many European countries, and as low as 0.2 percent in some Asian countries. A growing body of research on business ethics has tried to explore the relationship between gender diversity and corporate governance, focusing on the micro-level studies on the characteristics of female board members, boards and firms they are serving and the effects of gender diversity. However, gender diversity in management is said to provide a number of benefits, including new ideas and improved communication (*Milliken and Martins*, 1996), insights into the female market segmentation (*Daily, Certo and Dalton*, 1999) and transformational management style (*Rosener*, 1990). These competencies are particularly critical in a global world, where women also play active roles as entrepreneurs, managers and consumers (*Economist*, 2006). *Adler* (1997) has emphasized the importance of having women as well as men in the global talent pool in order to identify the next generation of leaders in the global society. Wise global leaders need the ability to work interactively and sensitively with the leaders from the other cultures and she has highlighted how some women global leaders use influence and inspiration rather than command and control to achieve their goals. Furthermore, female board members represent career opportunities for potential female employees (*Bilimoria*, 2006), inspire women employees to senior management roles (*Bilimoria and Wheeler*, 2000) and often engage in networking and mentoring of women through corporate networks. These positive spill overs may extend outside the firm. For example, law firms, whose key clients have women on their boards, are more likely to promote women (*Beckman and Phillips*, 2005). While the importance of women in corporate boards has long been acknowledged (*Burke*, 1997; *Bilimoria and Wheeler*, 2000), females have made only modest gains in terms of directorships on corporate boards (*Daily, Certo and Dalton*, 1999; *Arfken, Bellar and Helms*, 2004). Studies at individual-and firm-level assumed that the labour market is open and fully competitive and have focused on the efforts of individuals and their organisations to adapt to the idea of gender diversity so that more women can achieve top positions. A review of the glass ceiling literature by *Powell* (1999) has indicated that, at the individual level, in the past, women were said to lack the necessary qualities, such as ambition and confidence in comparison to men as well as leadership skills, such as assertiveness and influencing behaviour. Women were also said to lack the relevant experience or education for leadership (*Powell*, 1999), although women now have higher academic qualifications, on an average,

than men (*HESA, 2003*). Situation-centered explanations include women's family responsibilities that hinder or are perceived to hinder their commitment to the organisation and their lack of involvement in the corporate networks that provide access to powerful people. Other barriers are based in gendered social systems, where work has been designed by men for men and where patriarchy defines work roles by gender, leading to direct discrimination and stereotyping. Structures, such as recruitment and promotion systems operate in a gender biased way, for instance, on the assumption that career paths for leaders will be unbroken, thereby, excluding women who take maternity leave or part-time work, or who relocate several times due to partners' career moves. Finally, interaction-centered explanations, for the lack of women's advancement, focus on the aggregated effect of interacting processes, such as women's reluctance to self-promote or actively manage their careers in organisations with informal promotion processes (*Singh, Kumra and Vinnicombe, 2002*). This can lead to managerial assumptions that women are happy to continue with their present position, whilst male peers indicate much more strongly to the promotion gatekeepers their ambition, their career successes and their readiness for the next step. In such processes, women may self-limit their advancement unless managers are aware of gender differences and take steps, such as mentoring and advocacy, to address the situation. However, it has been observed from time to time, through different researches, that higher proportion of female members in a board helps them positively contribute towards the organizational value. In 2007, both *Catalyst* and *McKinsey* have shown a correlation between gender-diverse boards and greater company performance. A recent *McKinsey* publication has reported measurement of organizational excellence across 231 companies worldwide, revealing that the companies with three or more women in the senior management functions have more high score for each organizational criterion than the companies with no women at the top level. The study has shown that performance increases significantly once a critical mass of 30% women at the board level is attained, noting, however, no significant difference in the performance of the companies below the threshold.

However, the Government of India has adopted an appropriate measure for inclusion of, at least, one women director in the boards of the listed companies, public sector companies and other special class of companies through in terms of Section 149 (1) of the New Companies Act, 2013. Against this backdrop, the present study has been undertaken to deal with pertinent issues arising out of the New Companies Act, 2013, as well as find out the state of women participation and the degree of diversity in the board of S&P BSE-SENSEX companies.

Why Promote Gender Diversity in Board?

Fresh Perspectives

Boards with a balance between men and women tend to consider a wider range of issues and options, resulting in commercial decisions that are more in touch with the customer needs.

The fact that women drive more than 80 per cent of the consumer decisions in the households indicates the depth of customer understanding that women can bring in to the commercial boards. (Hudson, A. [2007], *Women flunk finance*, New Zealand Herald, November, 18).

Effective Leadership

The McKinsey Report, *Women Matter 2*, has found that women are more likely to express five of the top nine leadership behaviours that correlate with organisational excellence like people development, expectations and rewards, role modelling, inspiration, and participative decision-making. Of the four remaining behaviours, women use two in the same amount as men (intellectual stimulation and efficient communication) and men use two more than women (individualistic decision-making and control and corrective action). (McKinsey & Company [2008], *Women Matter 2: Female leadership, a competitive edge for the future*, McKinsey & Company, Paris). The report notes that organisational performance relies on the use of a variety of leadership behaviours. Therefore, by including both men and women at the board level, businesses are likely to benefit from diversity of leadership as well as experience.

Role Models

Further research by Catalyst (Catalyst [2007], *The Bottom Line: Corporate performance and women's representation on boards*, Catalyst, New York) shows that having women on boards leads to more women in senior management. Women in corporate leadership provide positive role models for other women entering the workforce, giving them a goal to aspire for. A richer mix of people at the board level sends a message both to the market and to the staff that the company is focused on performance and talent and is open to change and innovation.

A Competitive Edge

Whether it is a time of growth or contraction, there will always be a need for the best possible talent in company leadership ('Melting the marzipan layer provides entrée to boardroom', in Independent Financial Review, November, 27, 2008). Recent economic turmoil has caused many to rethink the traditional views on company membership. In the late 2008, a group of 17 chief executives and heads of the FTSE 100 companies in the UK wrote an open letter to the Daily Telegraph, calling for gender equity in the country's boardrooms because 'extraordinary times call for innovative solutions'.

Investor Confidence

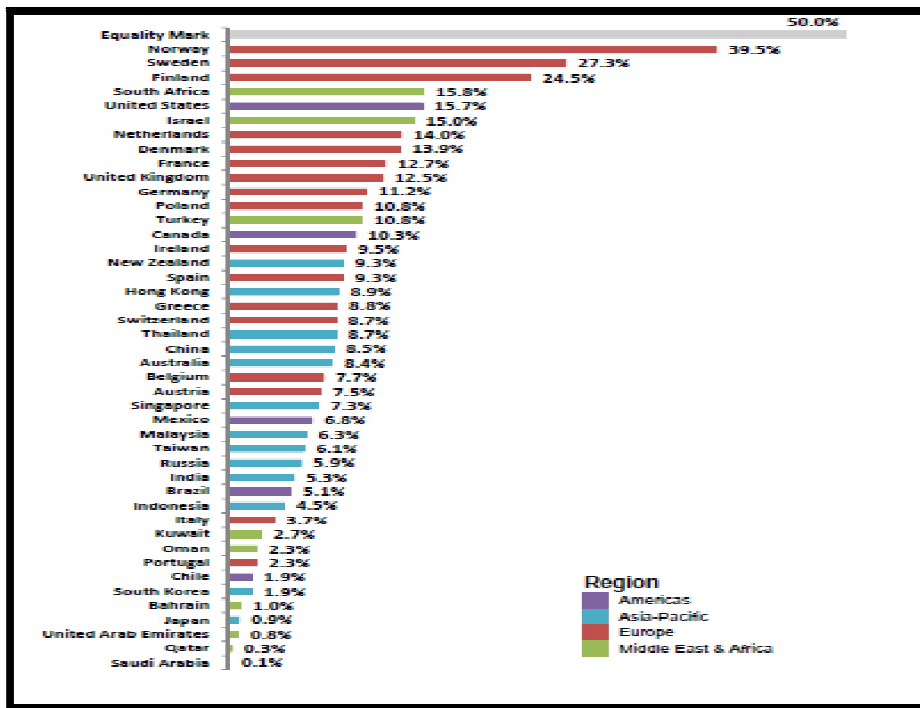
Increasingly, shareholders and the rating agencies are factoring into, while assessing company performance, the number of women on boards. Two major investment funds, *Calpers* in the USA and *Amazone* in Europe, include a gender-balance indicator among their investment criteria and the rating agencies, *Innovest* and *Vigeo*, among others, are developing tools to measure gender balance. The focus of those organisations is on performance and organisational excellence and it is significant that they see gender issues as pivotal to investment decision-making.

Women will also be increasingly important investors in the future. They are likely to prefer to invest in companies that have women in leadership positions, including women directors.

Women Representations in Board- The Global Picture

Very small number of women on boards is, in part, a symptom of insufficient numbers of women at the top of the management structure and under-representation of women at the senior management levels in general. However, a research by the *Cranfield School of Management* has identified that across Europe, female representation is low amongst the executive board members. 20.7% of all the board positions in the largest European companies are executive positions, 25 of which (i.e., only 4.2%) are taken by women. Of the 323 executive directorships in the FTSE 100 companies only 18 posts (5.5%) are held by women. In the top 101 US companies', women comprise just 15% of the executive committee members and in the top 101 European companies; women comprise only 7% of the executive committee members. In Asia that is a mere 3%.

Chart#1: Global Board Seats Held by Women



Source: Catalyst, 2011

The status of women representations in the board of the prestigious Fortune 500 companies is not an encouraging one. They occupy only 3 % of the CEO positions of the Fortune 500 companies goes and 15% of the boards are being held by women.

The status of women board directors across the world depicted a gloomy picture towards equity as revealed by “2014 Catalyst Census: Women Board Directors” survey conducted by Catalyst in partnership with The Data Morphosis Group. The brief findings of the survey are stated below.

- **North America:** Women hold 19.2% of S&P 500 board seats in the United States; and 20.8% of S&P/TSX 60 board seats in Canada.
- **Europe:** Women’s share of board seats ranges from 7.9% in Portugal (PSI-20 index) to 18.5% in Germany (DAX index) to 22.8% in the United Kingdom (FTSE 100 index) to 35.5% in Norway (OBX index).
- **Asia-Pacific:** Women’s share of board seats ranges from 3.1% in Japan (TOPIX Core 30 index) to 9.5% in India (BSE 200 index) to 19.2% in Australia (S&P/ASX 200 index).

However, a lot of initiatives have already been taken across the world, especially in the European countries to enhance board diversity. Here, is a brief look at those initiatives-

Norway – in February 2002, the government gave a deadline (i.e., July 2005) for the private listed companies to raise the proportion of women on their boards to 40%. Full compliance was achieved by 2009. In fact, Norway was the first country in the world to insist on female quotas for company boardrooms. In the last six years, women's representation as the leaders of Norwegian business has risen from 6% to 44%. In order to find the willing and able women to be placed in the directorship positions, the Norwegian firms often have to look beyond the traditional sources. The new legislation has led to the germination of a plethora of new women-focused executive search firms, training and mentoring programme as well as networking organizations. Examples of these include the *Professional Board Forum* and another similar organization *CMi*, a mentoring program based in Brussels, where executives are prepared for the director and chief executive positions.

Spain – A gender equality law was passed in 2007, obliging the public companies and the IBEX 35-quoted firms, with more than 250 employees, to attain a minimum 40% share of each sex on their boards within eight years i.e. 2015.

Iceland – A quota law was passed in 2010 (suggesting 40% from each sex by 2013) applicable to the publicly-owned and public limited companies with more than 50 employees.

Finland – From 2008, the 'comply or explain' code requires that every board should have, at least, one man and one woman.

France – A bill has been passed applying a 40% quota for female directors by 2016.

Netherlands – Proposals have been made to apply a 30% quota for men and women for larger companies which will have to explain any non-compliance.

Promoting Gender Diversity in Board: Changes in the new Companies Act, 2013

In one of the significant attempt to provide new direction to the Corporate India and to cope with changing socio-economic scenario, the Indian Parliament had passed new Companies Bill, 2013, on 8th August, 2013, which subsequently received the consent of Honourable President of India on 29th August, 2013 to become Companies Act, 2013, replacing the age-old Companies Act, 1956. Among a lot of things, prescribed by the new Act, the provision that has a paramount role to change the tradition of the board structure of the Corporate India is none other than the Section 149. According to Section 149 (1) of Companies Act, 2013, every listed company shall have to appoint, at least, one woman director within one year as per the second proviso to the Section 149 (1). Moreover, every public company, having paid-up capital of Rs.100 crore or more, and turnover of Rs.300 crore or more, have to compulsorily appoint, at least, one woman director within three years as per the second

proviso to the Section 149 (1). However, nowhere in this Act, the qualification, the eligibility criteria as well as the status of the women directors have been prescribed.

Women Representations in Board: The Indian Experience

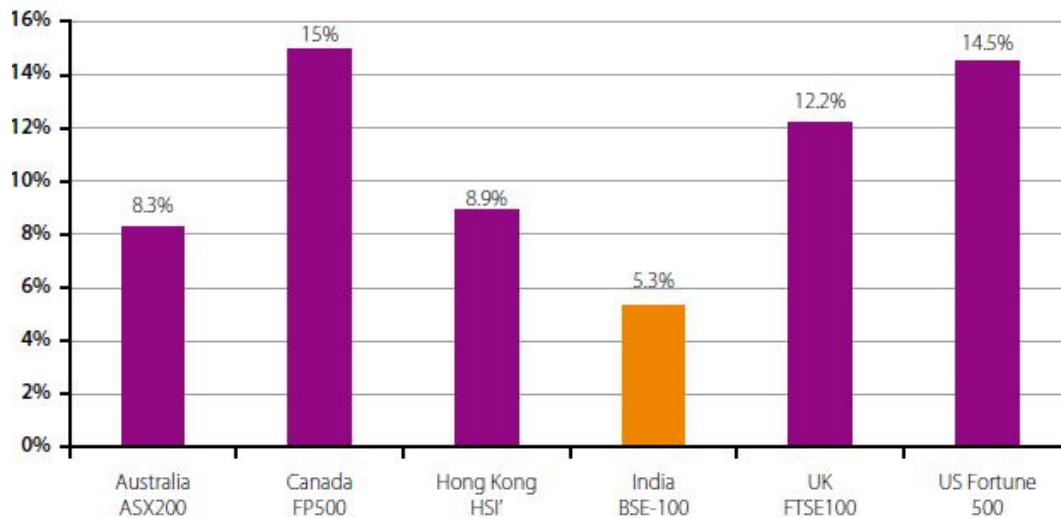
This *Standard Chartered Bank: Women on Corporate Boards in India 2010 Report* looks at the representation of women on the boards of India's leading companies listed on the Bombay Stock Exchange (BSE-100 Companies). It ranks the companies in terms of the gender diversity of their boards, with those with the highest percentage of women on their boards appearing at the top. The report also examines the general topic of gender diversity on the boards of the BSE-100 companies by presenting the findings of interviews with 18 female directors of the BSE-100 companies. At the top of the list is JSW Steel Ltd which has 3 women (23.1%) on its board of 13. Oracle Financial Services Software Ltd is the second one with 2 women (22.2%) on its board of 9 and Piramal Healthcare Ltd is the third one with 2 women (20.0%) on its board of 10. Axis Bank Ltd is in the fourth place with 2 women (18.2%) on its board of 11. Lupin Ltd and Titan Industries Ltd are both in the fifth place, each with 2 female directors (16.7%) on their boards of 12. Looking at the overall findings, the first year of this research reveals that out of a total of 1,112 directorships in the BSE-100 companies, 59 directorships are held by women, representing just only 5.3%. These directorships are held by 48 different women. This percentage does not compare favourably with the other countries - not just Canada (15.0%), the US (14.5%) and the UK (12.2%), but also Hong Kong (8.9%) and Australia (8.3%). Less than half of the companies (only 46) have women on their boards, meaning conversely that 54 companies have no female representation at all. Of a total of 323 executive directorships on the BSE-100 companies, only 8 are held by women, representing just 2.5%. However, 2 women (Chanda Kochhar and Shikha Sharma) hold CEO positions of two of India's leading banks, ICICI Bank and Axis Bank Ltd and Arundhuti Bhattacharaya, on the other hand, endows the chair of the SBI, the largest public sector bank in India.

Table #1: Gender Diversity of Boards of BSE-100 Companies

S.N.	Key Gender Diversity Number in 2010	No.	%
1.	Total number of directorships	1,112	
2.	Total female held directorships	59	5.3%
3.	Total number of executive directorships	323	
4.	Female executive directorships	8	2.5%
5.	Total number of non-executive directorships	789	
6.	Female non-executive directorships	51	6.5%
7.	Number of women holding BSE-100 directorships	48	
8.	Companies with female executive directors	7	7.0%
9.	Companies with at least one female director	46	46.0%
10.	Companies with multiple female directors	12	12.0%
11.	Companies with no female directors	54	54.0%

Source: Standard Chartered Bank: Women on Corporate Boards in India 2010 Report

Chart# 3: Percentage of Women on Boards - An International Comparison



Source: Standard Chartered Bank: Women on Corporate Boards in India 2010 Report

Objectives of the Study

In this paper an attempt has been made to study:

- (i) the degree of board diversity across age, nationality, promotership in the selected major listed companies in India
- (ii) the degree of gender diversity in boards across the selected major listed companies in India and
- (iii) the degree of board diversity based on various parameters and the corporate governance practices across the selected major listed companies in India.

3. *Hypotheses of the Study*

Keeping the above objectives in mind, the hypotheses formulated have been stated below.

- the Corporate Governance Scores of the surveyed companies are same across the gender diversity
- the Corporate Governance Scores of the surveyed companies are same across the directors age
- The Corporate Governance Scores of the surveyed companies are same across the directors ethnicity/nationality
- The Corporate Governance Scores of the surveyed companies are same across the promotership of directors

Research Methodology

The present study has been conducted on the S&P BSE-SENSEX companies, a major indicator of the Indian economy's performance. Hence, the sample size of the study has been 30 major listed Indian companies considered for constructing the S&P BSE SENSEX as on 31.03.2014.

For the purpose of developing the basic understanding of the corporate governance practices of the surveyed companies, the variables mentioned below have been considered.

board structure; separation of dual responsibility of Chairman and CEO; frequency of meetings of board; nature; formation and effectiveness of different board committees, e.g., Audit Committee, Remuneration Committee, Investors' Grievance Redressal Committee, Nomination or Corporate Governance Committees; Employees' Grievance Redressal mechanism; existence of Whistle Blowing mechanism, etc.

Based on the 95 significant recommendations of 22 nationally-and internationally-accepted codes of Corporate Governance like *Cadbury Report* (The UK, 1992), *Greenbury Report* (The UK, 1995), *Viénot II Report* (France, 1999), *Commonwealth Association of Corporate Governance (CACG) Guidelines / Principles for Corporate Governance in the Commonwealth* (Commonwealth, 1999), *Combined Code of London Stock-Exchange* (The UK, 2000), *Euroshareholders Guidelines* (Europe, 2000), *Code of Corporate Governance for Listed Companies in China* (China, 2001), *TIAA-CREF Policy Statement on Corporate*

Governance (The USA, 2000), *NØrby Committee's Report on Corporate Governance* (Denmark, 2001), *Sarbanes-Oxley Act* (The USA, 2002), *Hermes Principles* (The UK, 2002), *King II Report* (South Africa, 2002), *The Cromme Code* (Germany, 2002 & 2003), *NYSE Listing Standard* (The USA, 2003), *Securities Exchange Commission Listing Rules* (The USA, 2003), *Higgs Report* (The UK, 2003), *Smith Report* (The UK, 2003), *International Corporate Governance Network (ICGN) Statement on Global Corporate Governance Principles* (ICGN, 2005), *Revised Combined Code of London Stock-Exchange* (The UK, 2006), etc. have been used.

Data Source

Data have been collected from the secondary sources. Different versions of PROWESS (Prowess 2.6, 3.0, 3.1 and 4) and Corporate Database (prepared by the Center for Monitoring Indian Economy [CMIE], Mumbai) have been made use of. Moreover, annual reports of those companies; electronic disclosures; relevant research publications, books, journals; reports in newspapers; materials in electronic newsletters of different professional institutions as well as corporate houses; and corporate rankings by different Indian and foreign agencies have been consulted as and when necessary.

Study Period

For the present study, data relating to the current financial year (2014-15) have been considered and analysed keeping in mind the application of the Section 149(1) [focussing on gender diversity] of the new Companies Act, 2013.

Statistical Tests Used

In order to test the relationship between various parameters of the board diversity (like gender, age, ethnicity, promotership) and the corporate governance practices of major listed companies of India, Mann-Whitney U test for 2 independent samples and Kruskal-Wallis test for n independent samples have been used. The Mann-Whitney U test is used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed and the Kruskal-Wallis H test (sometimes also called the "one-way ANOVA on ranks") is a rank-based nonparametric test that can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable.

Summary of the Findings

The state of affairs relating to gender diversity in the S&P BSE-SENSEX companies is not at all encouraging. Only 3 out of the top 30 companies have, at least, more than 2 women directors and 6 out of the 30 companies have no female directors. Out of a total 357 directors, representing the boards of those companies, the female directors are only 29, i.e., 8.12%. However, that is definitely an improved position as compared to the findings of the survey made by the Standard Chartered Bank in 2010 (only 5.3%), thanks to the Section 149 (1) of the new Companies Act, 2013. Here, a concise picture of gender diversity in the board of S&P BSE-SENSEX companies is presented below.

Table#3: Women Directors in the Board of the S&P BSE-SENSEX Companies

SL. No.	Name	Total No. of Directors	Total No. of Women Directors	Names of Women Directors	Degree of Gender Diversity in the Board (No. of Women Directors/Board Size)
1	Axis Bank Ltd.	14	3	Shikha Sharma (MD & CEO), Ireena Vittal (Independent Director), Usha Sangwan (Nominee Director)	21.43%
2	Bajaj Auto Ltd.	16	1	Sumon Kirolskar (Independent Director)	6.25%
3	Bharat Heavy Electrical Ltd.	8	1	Harinder Hira (Part Time Non-Official Director)	12.5%
4	Bharti Airtel Ltd.	15	3	Chua Sock Koong (Non-Executive Director), Obiageli Ezekwesili (Independent Director), Tan Yong Choo (Non-Executive Director)	20%

5	Cipla Ltd.	12	0	Nil	0
6	Coal India Ltd.	13	1	Sujata Prasad (Govt. Nominee Director)	7.69%
7	Dr. Reddy's Laboratories Ltd.	10	1	Kalpana Morparia (Independent Director)	10%
8	GAIL (India) Ltd.	11	1	Shyamla Gopinath (Govt. Nominee Director)	9.09%
9	Housing Development Finance Corporation Ltd.	12	1	Renu Sud Karnad (Managing Director)	8.33%
10	HDFC Bank Ltd.	11	1	Mrs. Renu Karnad (Nominee Director)	9.09%
11	Hero Motor Corporation Ltd.	11	0	Nil	0
12	Hindalco Industries Ltd.	10	1	Rajashree Birla (Non-Executive Director)	10%
13	Hindustan Unilever Ltd.	8	0	Nil	0
14	ICICI Bank Ltd.	12	1	Chanda Kochhar (MD & CEO)	8.33%
15	Infosys Ltd.	11	2	Carol M. Browner (Independent Director) Kiran Mazumder Shaw (Independent Director)	18.18%
16	ITC Ltd.	14	1	Meera Shankar (Non-Executive Independent Director)	7.14%
17	Larsen and Toubro Ltd.	15	0	Nil	0
18	Mahindra and Mahindra Ltd.	13	1	Ranu Bijapurkar (Independent Director)	7.69%
19	Maruti Suzuki India Ltd.	12	1	Pallavi Shroff (Independent Director)	8.33%

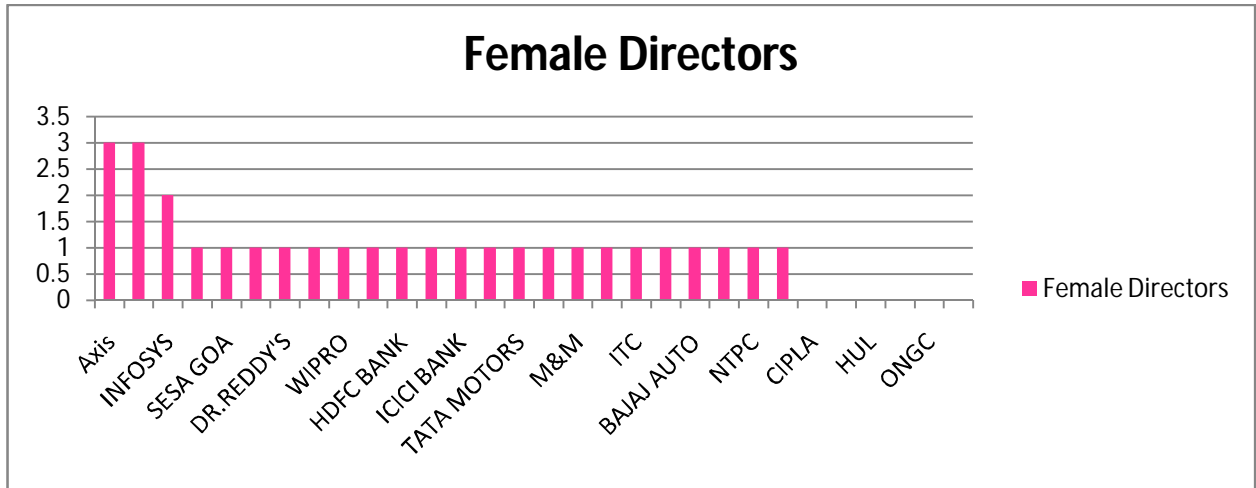
20	NTPC Ltd.	17	1	Homai A. Daruwalla (Independent Director)	5.88%
21	ONGC Ltd.	15	0	Nil	0
22	Reliance Industries Ltd.	14	1	Nita Ambani (Non- Executive Director)	7.14%
23	SBI Ltd.	16	1	Arundhuti Bhattacharya (Chairman and Executive Director)	6.25%
24	Sesa Sterlite (Goa) Ltd.	9	1	Lalita D. Gupte (Non- Executive Independent Director)	11.11%
25	Sun Pharmaceutical Industries Ltd.	9	1	Rekha Sethi (Non- Executive Independent Director)	11.11%
26	Tata Motor Ltd.	12	1	Falguni S. Nayar (Non- Executive Independent Director)	8.33%
27	Tata Power Co. Ltd.	11	1	Vishakha Mulye (Independent Director)	9.09%
28	Tata Steel Ltd.	13	1	Mallika Srinivasen (Non- Executive Independent Director)	7.69%
29	TCS Ltd.	11	0	Nil	0
30	Wipro Ltd.	10	1	Ireena Vittal (Independent Director)	10%

Source: Worked out by the Researchers based on Corporate Disclosures, 2014-15

It can be observed from the above table that in 6 of the BSE-SENSEX companies, India's most dominating, prestigious and sensitive companies, there is no place for women in the boards. Companies Like Bharti Airtel, Axis Bank, Infosys Ltd. have registered greater degree of gender diversity in their boards as compared to other fellow S&P BSE-SENSEX companies with, at least 20% of the boards represented by the pink collar directors. However, out of the 333 directors of all the 30 BSE SENSEX companies, only 21 are women directors

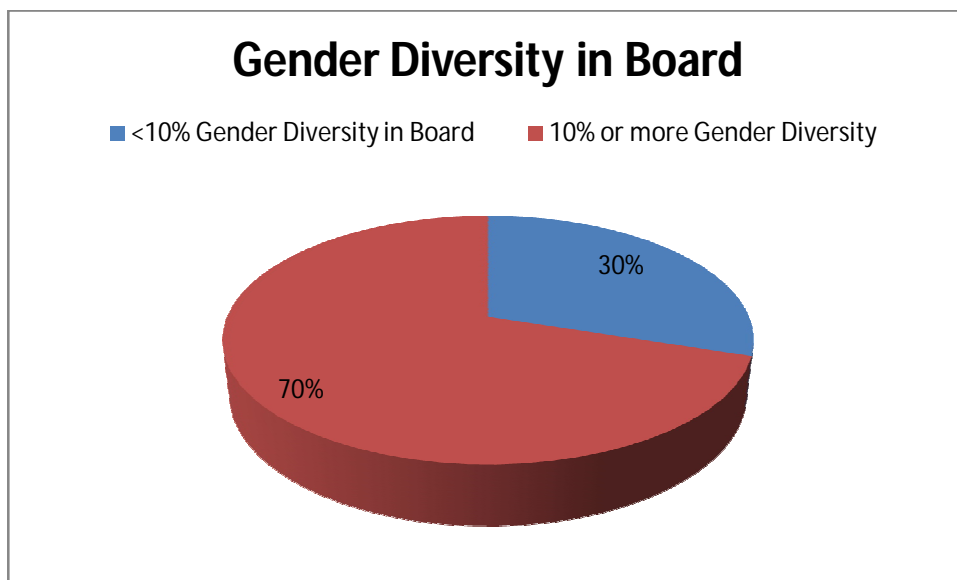
(i.e., only 6.31%). This proves that the overall situation in the Indian major listed companies is really discouraging so far as gender diversity in the board is concerned.

Chart#4 Female Directors in the Boards of the S&P BSE-SENSEX Companies



Source: Worked out by the Researchers based on Corporate Disclosures, 2014-15

Chart #5 Degree of Gender Diversity in the Boards of the S&P BSE-SENSEX Companies



Source: Worked out by the Researchers based on Corporate Disclosures, 2014-15

Corporate Governance Practices of the Surveyed Companies

Based on the texts relating to the companies available in Prowess and corporate disclosures, the state of affairs of corporate governance practices of the major listed Indian companies (considered for constructing the S&P BSE-SENSEX) has been assessed by using the binary scale, i.e., assigning '1' for compliance and assigning '0' for non-compliance. The relative 'corporate governance scores' for each of those companies have been worked out and presented below.

Table#4 Corporate Governance Score of S&P BSE SENSEX Companies

Name of the Comapny	Corporate Governance Score
INFOSYS	91.57895
RIL	84.21053
DR.REDDY'S	83.15789
TATA POWERS	80.00000
WIPRO	78.94737
Bharti Airtel	76.84211
HDFC	76.84211
L&T	76.84211
HDFC BANK	75.78947
TISCO	75.78947
M&M	74.73684
Axis	73.68421
TCS	73.68421
TATA MOTORS	73.68421
ONGC	72.63158
ITC	71.57895
SESA GOA	71.57895
ICICI BANK	70.52632
NTPC	70.52632
HUL	69.47368
SUN PHARMA	69.47368
HERO HONDA	67.36842
MUL	66.31579
BAJAJ AUTO	64.21053
HINDALCO	64.21053

BHEL	63.15789
GAIL	62.10526
Coal India	57.89474
SBI	57.89474
CIPLA	51.57895

Source: Worked out by the Researchers based on Prowess and Corporate Disclosures

Statistical Testing and Results

Hypothesis#1: Gender Diversity and Corporate Governance Practices

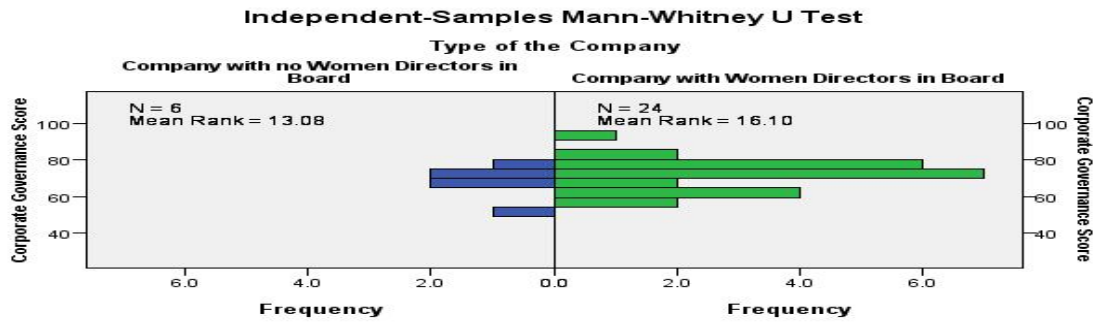
In order to test the validity of relationship between the degree of gender diversity in the board and the corporate governance practices (as reflected by the disclosure practices) of the S&P BSE-SENSEX companies, Mann-Whitney U Test has been used [H_0 : $CGS_{\text{gender diversified board}} = CGS_{\text{gender non-diversified board}}$ against H_1 : $CGS_{\text{gender diversified board}} \neq CGS_{\text{gender non-diversified board}}$]. It has been observed that p value is greater than 0.05 ($p=0.462$), so the *null hypothesis* cannot be rejected and the conclusion is that degree of gender diversity has no statistically significant impact on corporate governance practices.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Corporate Governance Score is the same across categories of the company.	Independent-Samples Mann-Whitney U Test	.462 ¹	Retain the <i>null hypothesis</i> .

Asymptotic significances are displayed. The significance level is .05.

¹Exact significance is displayed for this test.

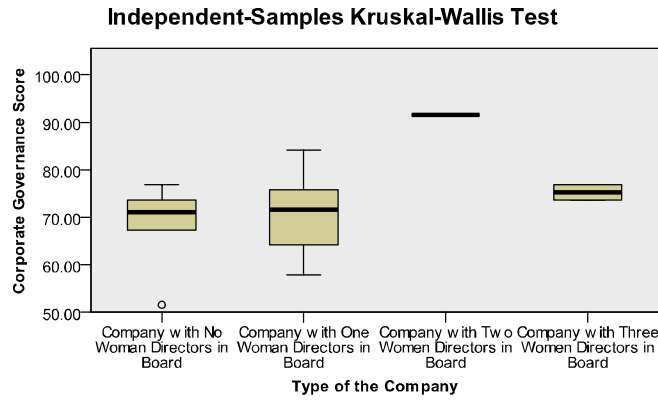


Total N	30
Mann-Whitney U	57.500
Wilcoxon W	78.500
Test Statistic	57.500
Standard Error	19.257
Standardized Test Statistic	-.753
Asymptotic Sig. (2-sided test)	.451
Exact Sig. (2-sided test)	.462

Source: Result generated through IBM SPSS (Version: 21)

Moreover, in order to further verify the degree of association of the gender diversity and the corporate governance practices, k-independent sample Kruskal-Wallis Test has been performed for testing the *null hypothesis* of $H_0: CGS_{\text{company with no women director in board}} = CGS_{\text{company with one women director in board}} = CGS_{\text{company with two women director in board}} = CGS_{\text{company with three women director in board}}$ against $H_1: CGS_{\text{company with no women director in board}} \neq CGS_{\text{company with one women director in board}} \neq CGS_{\text{company with two women director in board}} \neq CGS_{\text{company with three women director in board}}$. The result again shows that the *null hypothesis* cannot be rejected since p value is greater than 0.05 (i.e. $p=0.258$) and, thus, the variation of the corporate governance practices of the surveyed companies cannot be statistically explained by the degree of gender diversity factor in the boards of these companies.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Corporate Governance Score is the same across categories of the company.	Independent-Samples Kruskal-Wallis Test	.258	Retain the <i>null hypothesis</i> .
Asymptotic significances are displayed. The significance level is .05.				



Total N	30
Test Statistic	4.033
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.258

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Source: Result generated through IBM SPSS (Version: 21)

Hypothesis#2: Age of Directors and Corporate Governance Practices

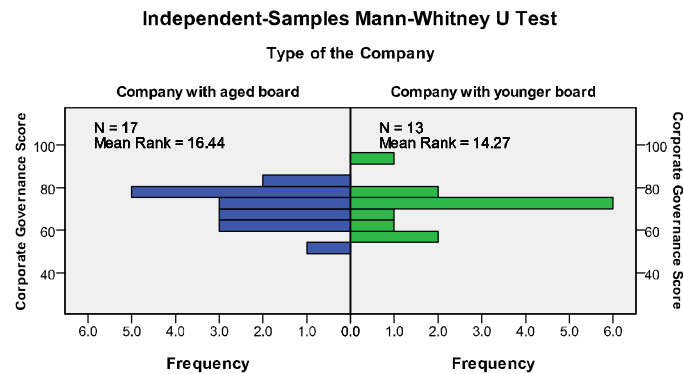
In order to test the validity of relationship between the age of directors and the corporate governance practices (as reflected by the disclosure practices) of the S&P BSE-SENSEX companies, Mann-Whitney U Test has been used [$H_0: CGS_{aged\ board} = CGS_{younger\ board}$ against $H_1: CGS_{aged\ board} \neq CGS_{younger\ board}$]. It has been observed that p value is greater than 0.05 ($p=0.509$) so the *null hypothesis* cannot be rejected and the conclusion is that age of directors has no statistically significant impact over corporate governance practices.

Hypothesis Test Summary

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Corporate Governance Score is the same across categories of Type of the company.	Independent-Samples Mann-Whitney U Test	.509 ¹	Retain the <i>null hypothesis</i> .

Asymptotic significances are displayed. The significance level is .05.

¹Exact significance is displayed for this test.



Total N	30
Mann-Whitney U	94.500
Wilcoxon W	185.500
Test Statistic	94.500
Standard Error	23.841
Standardized Test Statistic	-.671
Asymptotic Sig. (2-sided test)	.502
Exact Sig. (2-sided test)	.509

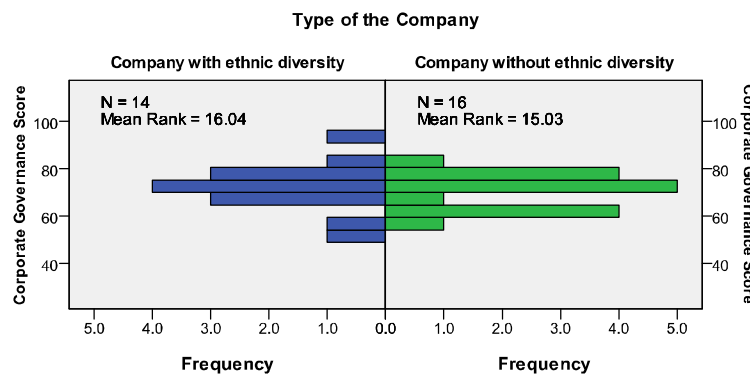
Source: Worked out by Researchers by using IBM SPSS (Version:21)

Hypothesis#3: Ethnic Diversity of Directors and Corporate Governance Practices

In order to test the validity of relationship between ethnic diversity/nationality of directors and the corporate governance practices (as reflected by the disclosure practices) of the S&P BSE-SENSEX companies, Mann-Whitney U Test has been used [H_0 : $CGS_{\text{ethnic diversified board}} = CGS_{\text{ethnic undiversified board}}$ against H_1 : $CGS_{\text{ethnic diversified board}} \neq CGS_{\text{ethnic undiversified board}}$]. It has been observed that p value is greater than 0.05 ($p=0.759$) so the *null hypothesis* cannot be rejected and the conclusion is that ethnic diversity/ nationality of directors has no statistically significant impact over corporate governance practices.

Hypothesis Test Summary			
Null Hypothesis	Test	Sig.	Decision
1 The distribution of Corporate Governance Score is the same across categories of Type of the Company.	Independent-Samples Mann-Whitney U Test	.759 ¹	Retain the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.			
¹ Exact significance is displayed for this test.			

Independent-Samples Mann-Whitney U Test



Total N	30
Mann-Whitney U	104.500
Wilcoxon W	240.500
Test Statistic	104.500
Standard Error	24.002
Standardized Test Statistic	-.312
Asymptotic Sig. (2-sided test)	.755
Exact Sig. (2-sided test)	.759

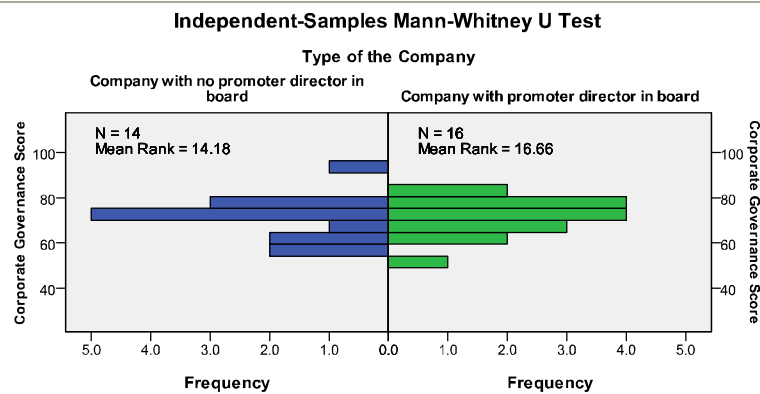
Source: Worked out by Researchers by using IBM SPSS (Version:21)

Hypothesis#4: Promoter Directors in Board and Corporate Governance Practices

In order to test the validity of relationship between presence of promoter directors in board and the corporate governance practices (as reflected by the disclosure practices) of the S&P BSE-SENSEX

companies, Mann-Whitney U Test has been used [H_0 : $CGS_{\text{presence of no promoter director in board}} = CGS_{\text{presence of promoter director in board}}$ against H_1 : $CGS_{\text{presence of no promoter director in board}} \neq CGS_{\text{presence of promoter director in board}}$]. It has been observed that p value is greater than 0.05 ($p=0.448$) so the *null hypothesis* cannot be rejected and the conclusion is that presence of promoter director in board has no statistically significant impact over the corporate governance practices.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Corporate Governance Score is the same across categories of Type of the company.	Independent-Samples Mann-Whitney U Test	.448 ¹	Retain the <i>null hypothesis</i> .
Asymptotic significances are displayed. The significance level is .05.				
¹ Exact significance is displayed for this test.				



Total N	30
Mann-Whitney U	93.500
Wilcoxon W	198.500
Test Statistic	93.500
Standard Error	24.002
Standardized Test Statistic	-.771
Asymptotic Sig. (2-sided test)	.441
Exact Sig. (2-sided test)	.448

Source: Worked out by Researchers by using IBM SPSS (Version:21)

Conclusion

In this present paper the relationship between various parameters of the board diversity (like gender, age, ethnicity, promotership) and the corporate governance practices of major listed

companies of India could not be statistically established. However, consideration of data for longer time frame, inclusion of multi-dimensional issues and inclusion of financial performance in research ambit may be an exciting research endeavour in future. Although Corporate India had made a paradigm shift from its early history of family-dominated board structure to a modern diversified governance mechanism in line with proper and timely governmental interventions (in the form of Clause 49 of Listing Rules or changes in Companies Act etc.) this is really early to comment on the impact of diversity in board especially gender diversity in board on corporate governance process in general and various corporate management issues in particular. To comprehend the real benefit of rise of 'Women Power' in boardroom as well as day-to-day management and surveillance activities we have to wait patiently. The measures taken by the Govt. of India to promote gender diversity in board is really a positive and revolutionary measure but nowhere in this Act have the status and qualification of woman director have been mentioned. Comparing the provisions of woman director and independent directors on the Boards of companies it is not clear if the woman director is also required to be an independent director. It is also not clear from the Act that can she be part of the promoter group. MCA should be clearer on this aspect because it is an important provision and being introduced for the first time in Indian corporate law history. If she is to be considered as part of the promoter group, then it would be better to scrap this provision or not implement it all, because it is going to be a farce with women in the households of the promoter group being routinely given a seat on the Board of Directors and they will virtually not have a say on the affairs of the company but merely act as a rubber stamp. It would be pertinent that woman director should be counted as an independent director if she has to make an impact on the gender representation in the Board of Corporate India in new millennium.

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FORMATION DISCLOSURE REQUIREMENT: A PANACEA FOR STAKEHOLDERS

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INTRODUCTION:

Corporate entities work with contribution made by the stockholders and accumulates the same in joint or common stock which is then managed by another agency that is the Board of the Directors. The Board is supposed to act as an agent of the stockholders and to protect interest of the investors in the common stock. The investors themselves are not taking part in the conduct of the affairs of the business. The responsibility is entrusted to the Board. This tenet of corporate management with information disclosure has been duly recognised in Agency Theory of Watts and Zimmerman. Before the evolution of this theory, the essence of information and management has been legally established in a case of Solomon vs. Solomon. As a result, the stockholders, general investors and other stakeholders put their reliance on information publicly made available by the Board. A great onus has been placed on the Board to be reasonable, fair, diligent, honest and prudent in information disclosure so that the stakeholders feel confident about the way in which the common stock is appropriated to the best interest of the general stakeholders. After the Companies Act, 1956 was put into operation, there were many occasions which brought into focus the deficiency in information disclosure. The Companies Act, 2013 also made some provisions with regard to articulating the onus on the Board to make reliable material information for the stakeholders so that their interest in the hands of the Board is adequately protected.

OBJECTIVES OF THE STUDY:

The present research enquiry has been undertaken with the following objectives:

1. To examine the mandates as per the Companies Act, 2013 on information disclosure;
and
2. To study the consequence of non-disclosure or partial disclosure of information in respect of a select corporate entity.

METHODOLOGY:

The study is based purely on secondary information relying heavily on the Companies Act, 2013. The researcher has critically scrutinized several provisions of the Act with regard to mandate of information disclosure. To achieve the first objective, the study is divided into five levels of information disclosure pertaining to its operation, namely- Raising of Capital, Appointment of Directors, Management and Administration, Annual Closing and Miscellaneous. In each of the level the relevant provisions of the Act pertaining to disclosure of information have been examined in the light of the importance attached to its disclosure. To achieve the second objective the researchers have conducted a case study on the USL and Diageo Limited to analyse the importance of disclosure of information and the consequence of non disclosure of such information.

Having considered the aforesaid objectives, we may now highlight the various provisions contained in Companies Act, 2013 some of which are even introduced for the first time in India in order to satisfy the users of information for their pecuniary transactions.

INFORMATION DISCLOSURE REQUIREMENT ON RAISING OF CAPITAL:

1. Section 23 provides that a public company or a private company may issue securities on satisfaction of certain conditions.
2. The following matters to be stated in a prospectus as per section 26:
 - a. Names and address of the registered office of the company
 - b. Statement by the Board of Directors about a separate bank account
 - c. Procedure and times schedule for allotment and issue of securities
 - d. Main objects of public offer
 - e. Management perception of risk factors specific to the project
 - f. Sources of promoter's contribution
 - g. Following reports to be provided by way of financial information: Reports of Auditors of the company, Reports relating to Profits and Losses for each of the five financial years, Reports about the business to which the proceeds of the securities are to be applied, Declaration about the compliance of the provisions of this Act.
3. Advertisement of prospectus under section 30 states that where an advertisement of an prospectus is published, it shall contain contents of its memorandum as regards the objects, liability of the members, amount of share capital and names of signatories to the memorandum.

4. Section 31 on Shelf Prospectus states that any company may file a shelf prospectus with the Registrar of Companies (RoC) as the SEBI may provide mostly containing all material facts relating to new charges created. Shelf Prospectus is a prospectus in respect of which the securities are issued for subscription in one or more issues over a certain period without the issue of a further prospectus.
5. As per provisions of Section 32 on Red Herring Prospectus which may be issued prior to the issue of main prospectus may be filed with the Roc prior to the opening of the subscription list and the offer. Red herring Prospectus means a prospectus which does not include complete particulars of the quantum or price of the securities included therein.

INFORMATION DISCLOSURE RELATING TO APPOINTMENT OF DIRECTORS:

Considering the objectives of the article stated above, we make an analysis of the various provisions in the Companies Act, 2013 with regard to information disclosure to be made by the company to the concerned regulating agencies especially with regard to appointment of directors and the mandate of the Act which are described hereunder:

1. On appointment as a director in a company, one's appointment will not be effective unless consent in writing is given which in turn should be filed with the registrar of Companies (RoC) within 30 days of appointment.
2. In case of appointment of an independent director in an general meeting, an explanatory statement for such appointment shall include a statement that in the opinion of the Board, he fulfills the conditions stipulated for such an appointment.
3. Section 150 of the Act relates to the manner of selection of Independent Directors and maintenance of databank of independent directors. This is a new section which empowers the Central Government to prescribe for manner and procedure of selection of independent directors.
4. Section 152 further provides that every director would obtain Director Identification Number (DIN) from the central government before accepting appointment as a director. Every individual intending to be appointed as a director of a company shall apply to the central government along with necessary fees seeking allotment of DIN. Under section 157 the company shall furnish the DIN of all its directors to the RoC.
5. Section 165 relating number of directorships states that no person shall hold office as a director in more than 20 companies at the same time and provided further that the

maximum number of public companies in which a person can be appointed as a director shall not exceed 10.

6. Section 168 which is a new section states that in case a director resigns from his office by giving a notice in writing, the Board, in turn, shall inform the RoC and place such resignation in the subsequent general meeting of the company.
7. Section 184 relating to disclosure of interest by director states that every director at the first board meeting shall disclose his concern or interest in any company or firms which shall include the shareholding. He shall also disclose his concern or interest in a contract or arrangement with other body corporate in which he acts as a director and holds more than 2 percent shareholding of that body corporate or a firm in which he is acting as a director or a partner.

DISCLOSURE REQUIREMENTS ON MANAGEMENT, ADMINISTRATION, AUDIT AND INTERNAL CONTROL:

1. Under Section 132 the Central Government may constitute a National Financial Reporting Authority (NFRA) to provide for matters relating to accounting and auditing standards under this Act. Members of the NFRA shall not be associated with any audit firm during the course of their appointment and two years after ceasing to hold such appointment. NFRA is a regulating authority, shall scrutinize the professional or other misconduct under Section 22 of the Chartered Accountants Act, 1949.
2. As per Section 133 the Central Government may prescribe the standards of accounting or any addendum thereto as recommended by the ICAI in consultation with the NFRA.
3. Section 186 states that a company shall make investment through not more than two layers of investment company. The company shall disclose to the members in the financial statement the full particulars of the loan given and investment made by the company.
4. Section 195 states that no person including any director or key managerial personnel shall communicate about any non-public price sensitive information to any person. This is done to prevent insider trading.
5. Section 138 is a new section and seeks to provide that prescribed companies shall be required to conduct internal audit of functions and activities of the companies by

internal auditor appointed by the company. Manner of conducting internal audit shall be prescribed by the Central Government.

6. As per Section 142 every auditor shall comply with the auditing standards. The central government may prescribe the standards of auditing as recommended by the Institute of Chartered Accountants of India under section 2 of the Chartered Accountants Act, 1949.
7. Section 144 titled “Auditor not to render certain services” is a new section and seeks to provide that an auditor can do such other services as approved by the Board or Audit Committee. The section specifically provides the services which the auditor cannot perform directly or indirectly to the company or its holding company, subsidiary company or associate company.
8. Section 177 relating to constitution of Audit Committee states that the Board’s report under section 134(3) shall disclose the composition of an Audit Committee and where the Board had not accepted any recommendation of the Audit Committee, the same shall be disclosed in such report along with the reasons.
9. Every listed company shall establish a vigil mechanism for directors and employees to report genuine concern.
10. Under Section 178 a company shall also form a Nomination and Remuneration Committee and Stakeholders Relationship Committee and may be disclosed in the Board’s Report.

INFORMATION DISCLOSURE ON ANNUAL CLOSING OF ACCOUNTS:

1. Section 128 of the Act states that every company shall maintain its books of accounts and prepare financial statements which give a true and fair view of the state of affairs of the company. Such books of accounts and other relevant papers be kept in electronic mode. Extensible Business Reporting Language (XBRL) is applicable in this respect. The books of branch offices and summarized returns from them received periodically be also kept in the Head Office of the entity.

The Ministry of Corporate Affairs had adopted XBRL for filing of financial information with the Central Government. The Financial Statements required to be filed in XBRL format would be based upon the XBRL Taxonomy developed as per the existing non converged Accounting Standards notified under the Companies (Accounting Standards) Rules, 2006. This mandate is for specified class of companies as mentioned below:

- a. All companies listed in India and their subsidiaries;
 - b. All companies having a paid up capital of Rs 5 crore and above or a turnover of Rs 100 crore or above, excluding power and banking companies, insurance companies, Non-Banking Financial Companies and overseas subsidiaries of these companies.
2. Under Section 129, Schedule III is prescribed for information disclosure through financial statements. Disclosure requirements under this schedule are in addition to the disclosure requirement specified in the Accounting Standards prescribed under the Companies Act, 2013. Additional disclosures specified in the accounting standards shall be made in the Notes to Accounts. All other disclosures shall be made in the Notes to Accounts. Notes to Accounts where required shall provide narrative description or disaggregation of items recognised in those statements. In preparing the financial statements including the Notes to Accounts, a balance shall be maintained between providing excessive detail that may not assist users of financial statements and not providing important information as a result of too much aggregation.
- In course of preparing financial statements under this schedule and at the same time while preparing consolidated financial statements, the company shall disclose the information regarding profit or loss attributable to minority interest and to owners of the parent in the Statement of Profit or Loss. Minority interest in the Balance Sheet within equity shall be presented separately from the equity of the owner of the parent. Minority interest is that interest which does not have the controlling power over the affairs of the company and which cannot influence the decision of the Board.
3. While preparing the financial statements the company shall comply with the accounting standards notified under section 133.
 4. The Board of Directors of the company shall lay before every Annual General Meeting the financial statements for the financial year.
 5. The financial statements of holding companies would also apply to the consolidated financial statements. Where the financial statements of a company do not comply with the accounting standards referred to in Section 129 (1), the company shall disclose in its financial statements, the deviation from the accounting standards, the reasons for such deviation and the financial effects, if any, arising out of such deviation.
 6. Section 131 is a new section which has been created to offer a scope to the Board of Directors to prepare revised financial statements or a revised Board's Report if it

appears to them that the company's financial statements or the Board's Report do not comply with Section 129 or Section 134 after obtaining approval from the Tribunal.

7. Under Section 134 the financial statements including consolidated financial statements shall be approved by the Board of Directors before they are signed. The Auditor's Report shall be attached to every financial statement. Items to be covered as an attachment to the statements and a report by its Board of Directors shall include the following:

- Abstract of the annual return of Section 92
- Number of meetings of the Board
- Director's Responsibility Statement
- Statement on Declaration given by Independent Directors of Section 149(6)
- Companies policy on Director's appointment and remuneration of Section 178(3)
- Explanation or comments by the Board on every qualification, reservation or adverse remark or disclaimer made by the auditor in his report and by the Company Secretary in practice in his Secretarial Audit Report, particulars of loans, Guarantees or investments under Section 186
- Particulars of contracts or arrangements with related parties of Section 188(1)
- The state of company's affairs
- The amounts proposed to carry to any reserve
- The amount it recommends be paid by way of dividends
- Material changes and commitments affecting the financial position of the company in the intervening financial period
- The conservation of energy, technology absorption, foreign exchange earnings and outgo
- A statement indicating development and implementation of a risk management policy and the elements of risk
- Details about the corporate social responsibility initiatives taken during the year
- In case of a listed company and other public company having paid up share capital formal annual evaluation done by the Board of its own performance.

8. Section 134(3) on Director's Responsibility Statement states that in preparation of annual accounts the applicable accounting standard had been followed and the

explanation relating to material departure accounting policies are selected and applied consistently and made reasonable and prudent judgment and estimates to give a true and fair view of the state of affairs of the company. Sufficient care has been taken for the maintenance of adequate accounting records, safeguarding the assets and for preventing and detecting frauds and other irregularities. Directors had prepared annual accounts on a going concern basis. Directors in case of a listed company lay down internal financial controls over the operation of the company. They devise proper system to ensure compliance with the provisions of all applicable laws.

Internal financial control for purpose of Section 134 means policies and procedures adopted leads to orderly and efficient conduct of company's business, adherence to company's policies, safeguarding of its assets, prevention and detection of frauds and errors, accuracy and completeness of accounting records, timely preparation of reliable financial information. The Board's Report shall be signed by at least two directors, one of whom shall be a managing director or by the director where there is one director.

9. Section 135 every company having net worth of Rupees 500 crore or more or turnover of Rs. 1000 crore or more or a net profit of Rs. 5 crore or more during any financial year shall constitute a Corporate Social Responsibility (CSR) Committee of the Board. The Board's Report under Section 134 (3) shall disclose the composition of the CSR Committee.
10. Section 137 on filing of financial statements with the RoC states that the financial statements should be filed within 30 days of the date of Annual General Meeting for the information and record in the office of the RoC. Further a company shall also furnish the accounts of its subsidiaries incorporated outside India and which has not established their place of business in India.

MISCELLANEOUS DISCLOSURE REQUIREMENTS UNDER THE COMPANIES ACT, 2013:

1. Section 211 empowers the Central Government to establish an office called Serious Fraud Investigating Office (SFIO) to investigate frauds relating to a company. The central government may assign the investigation into the affairs of the said company to the SFIO.
2. Section 218 on Protection of Employees during Investigation states that the company shall obtain approval of the Tribunal of the action proposed against the employee.

This is a new section which seeks to provide protection to the employee of the company during investigation.

3. According to Section 219 the inspector appointed under section 210 or 212 or 213 to investigate into the affairs of a company can investigate the affairs of any other body corporate where such corporate body is a holding company or the subsidiary company or has the same managing director or manager who acts on the directions of such company.

The Companies Act has also introduced forensic audit to protect stakeholders' interest and to prevent mismanagement of the affairs by the management. The Ministry of Corporate Affairs has instituted Serious Fraud Investigating Office (SFIO) and it can empanel Chartered Accountant firms to carry out forensic audit on stressed companies to prove cases of money laundering, financial statement fraud and fund diversion.

A forensic audit is an inspection and evaluation of a firm's financial information for use as evidence in court. Section 212 of the Companies Act, 2013 has conferred additional powers on SFIO in dealing with corporate frauds. It is for the first time that SFIO has created such a large pool of forensic auditors since its inception in 2003.

Section 143(12) of the Companies Act, 2013 and Section 13 of the newly amended Companies Act prescribe reporting of fraud by statutory auditor to the Company Board or Audit Committee of the Board as well as to the Central Government. The reporting threshold is now set at Rs. 1 crore. The need for such enforcement of forensic audit has arisen out of the reason that many corporate borrowers have failed to repay their dues in time to the lending institutions and commercial banks. The regulating authority is now trying to discipline the corporate borrowers that mere by borrowing from the moneylenders and then jeopardizing the interest of the large investors and shareholders.

A CASE STUDY ON USL AND DIAGEO:

In consonance with the second objective, we have undertaken a critical analysis of deficiency in information disclosure in respect of a select corporate entity and try to focus on the adverse consequences of the same.

The role played by independent directors and the Audit Committee of United Spirits Limited (USL) in February, 2016 following parent Diageo agreeing to pay Vijay Mallya 75 million dollar for exiting the company and protecting him from any liabilities stemming from inquiries into its books. USL's Directors took over and Diageo gaining management control of distiller company owned by Vijay Mallya. The USL had advanced loans to several entities

including UB holdings, during Mallya's tenure as Chairman. It is reported that the British spirit maker announced its accord with Mallya that would see him giving up the Chairman's post along with business and shareholder's rights at USL. The publicly released statement states that Mallya has been exonerated from all liabilities, which means that there was some kind of flouting of corporate governance rules and at the same time take-over code. Diageo of UK, being the parent company having USL as its Indian subsidiary, there is a possibility of non disclosure of adequate information between the two companies. Further the role played by the Audit Committee with regard to takeover deal was also not available in public domain. On the other hand, when the national lenders like SBI and other banks are pursuing to recover more than Rs. 9,000 crore, the transparency of financial statement is uncovered including the original purchase agreement involving Diageo, USL and Mallya in November, 2012. There is a doubt on the views of the independent directors and the Audit Committee on the financial statements of USL and its sale deed with Diageo at a critical time when the lenders were pursuing their due amount of credit.

The following issues have been formulated in course of our research enquiry over the matter:

1. The members of the Audit Committee could have used their diligence and professional skills to unearth the probable catastrophe the company is going to face in the near future. Deficiency in internal operation of the company should have been focused in the Audit Committee Reports.
2. The internal audit and internal check system did not focus on the matter earlier. The report of the Statutory Auditor could have indicated the possible impact of large borrowings from commercial banks and the loan repayment capacity of the company.
3. The obligation on the part of the Board to conduct a risk assessment and attach the risk assessment report in the financial statements appears to be in deficit after this commitment of NPAs came into public domain.
4. The deal between USL and Diageo effected in March, 2016 for which Mallya received 75 million dollar which gave him immunity to any kind of liabilities arising from the contract during his tenure as a Chairman of the subsidiary company was brought to the notice of the shareholders is not made public.
4. In case all the mandatory accounting standards and guidelines were complied with in course of preparation and presentation of financial statements and at the time of its attestation and certification on a regular basis are followed, this kind of information deficiency could have been averted ab initio and shareholders interest could have been saved.

5. The Director's Responsibility statement (DRS) with the DIN and signature on it could have also mentioned this in their report. The DRS is also supposed to conduct a risk assessment over the state of affairs of the company and focus it in its report forming a part of financial statements.

CONCLUSION:

Despite all the disclosure mechanism mandated in the Companies Act we still get repetition of deficiencies in financial information system publicly made available in case of public companies. The financial statements of the particular entity under study would have reflected the possible impact of large scale borrowing on the bottom line, had the disclosure mandates of the Companies Act would have been followed diligently.

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MARKETING PRACTICES IN THE HIGHER EDUCATION SECTOR – ETHICAL VS LEGAL

****Ms. Priyanka Dhanuka, *Dr.Bipasha Chetiya Barua**

ABSTRACT

Ethics are standards of moral conduct. To act in an ethical fashion is to conform to an accepted standard of moral behavior. Mere development of educational infrastructure would not help in producing responsible citizen without inculcating in them the basic ethics, values and virtues as advocated by various preachers of our ancient society. With the surge in the number of higher education institutions and fierce competition to enrol and retain students, certain unfair practices in education sector have come into the force. Various laws for regulating them are violated through marketing techniques for earning profit through any means. This has commercialised this sector. This change in the society have changed the perception of masses that whether the higher educational institutions are operating ethically as well as legally in imparting education to the society.

This paper therefore attempt to draw attention of the masses towards the distinction between the ethical and legal aspects of the practices adopted by the higher educational institutions. Every practice perceived as ethical might not be legal.

Introduction

Mere development of educational infrastructure would not help in producing responsible citizen without inculcating in them the basic ethics, values and virtues as advocated by various preachers of our ancient society. It is not possible to produce effective Managers, Technocrats, Bureaucrats, Politicians and Entrepreneurs without the knowledge of ethics, values and virtues. Corruption is all- pervasive and our education system is not an exception. The level of corruption in any organization depends upon three factors- the individual's sense of values, the set of values upheld and cherished by the society and lastly, the system itself will punish the guilty and if it does not, then the corruption flourishes.

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With the surge in the number of higher education institutions and fierce competition to enrol and retain students, certain unfair practices in education sector have come into the force. Traditionally, the focus of the government has been on recognition and affiliation of higher educational institutions but since the number of cases of unfair practices has been increasing at an alarming rate, the government of India has documented a bill called – “**The Prohibition of Unfair Practices in Technical Educational Institutions, Medical Educational Institutions and Universities Bill, 2010**”

However, this bill is yet to come into action. Moreover, several committees set up from time to time have also put forward their respective suggestions and stressed on enactment of proper laws ethics in this sector. This inspite, there remains a lot to be done in this regard.

Ethics in Marketing of Education

Ethics are standards of moral conduct. To act in an ethical fashion is to conform to an accepted standard of moral behavior¹. A variety of legal and ethical concerns regarding higher education exist within the context of domestic and international education scenario. The idea of education as a “public service” for the good of society coupled with the increased presence and use of commercial, third-party education agents within the domain of higher education has caused considerable debate around the commercialisation and privatisation of education, resulted in legal questions and violations, and the development of standards and best practices codes. It is expected that the growing demand for higher education and the rise of commercial agents to service this demand will continue to bring more attention to such ethical and legal questions, particularly related to the treatment of students and also institutional liability².

Instances of Unethical Practices in Education Market Across the Globe

The literature on the occurrence of malpractices in the higher education sector has been indicative of many such instances across the globe; below are highlighted a few of them:

- ❖ For instance in South Africa an exam scandal forced the provincial agriculture department to withhold bursaries³.

Similar instances are also in abundance in Indian context.

- ❖ For instance An Assistant Professor of a college in Dehradun was caught red-handed asking for a bribe of Rs. 25,000 to wrongly rectify the attendance shortage of a student⁴.
- ❖ Another case in Meghalaya reports against a private university allegedly involved in awarding Ph.D degrees to 434 students and enrolled 490 students for the Ph.D programme during 2012-2013⁵.

Objective

To identify whether the parents & wards are clear about the distinction between ethical & legal practices in marketing of higher education.

Hypothesis

“Parents & wards are clear about the distinction between ethical & legal practices in marketing of higher education”.

Methodology

The Population of the study is confined to the parents belonging to six professional groups within the geographical area of Dibrugarh Town, employed in government and semi-government organizations with an average salary ranging from Rs. 15000 to Rs. 50,000 and above per month, considering them to be a representative section of people who can afford higher education of their wards within or outside Assam. Population is determined by obtaining employee lists from the selected organisations. The sample design for the study is **judgmental Sampling** a non-probability sampling technique where the researcher selects units to be sampled based on their knowledge and professional judgment. This sampling is used as the population for the study is homogeneous from the point of view of income.

The sample size included in the study is 323 i.e. approximately 19% of the population i.e. 1697. The adequate sample size for a population of 2000 in the categorical data was found to be 323 at 5% margin of error as compared in the sample size determination table developed by Bartlett, Kotrlik, & Higgins. Therefore a sample of 323 was accepted as the final sample size of the study. The universe and sample plan on the above guidelines have been depicted below in **table 1**.

Table 1: Universe & Sample Plan of the Study.

No.	Basic Category	Professional Organisations	Population		Sample 19%	
1.	ACADEMICIANS	Dibrugarh University, Dibrugarh	114		22	
		DHSK Commerce College, Dibrugarh	26		5	
		DHSK College, Dibrugarh	79		15	
		DHSK Law College, Dibrugarh	13		2	
		MDK Girls College, Dibrugarh	41		8	
		Total		273		52
2.	LAWYERS	Bar Association, Dibrugarh	380		72	
		Total		380		72
3.	DOCTORS	Assam Medical College, Dibrugarh	304		58	
		Total		304		58
4.	ENGINEERS	P.W.D. National Highway (NH), Dibrugarh.	59		11	
		P.W.D. Roads, Dibrugarh.	115		22	
		Total		174		33
5.	ENTREPRENEURS/ BUSINESSMEN	Eastern Assam Chamber of Commerce, Dibrugarh.	100		19	
		Total		100		19
6.	EXECUTIVES / OFFICERS (Management & Administrative)	Life Insurance Corporation of India, Dibrugarh.	69		13	
		United Bank of India, Dibrugarh.	54		10	
		Income Tax Department of India, Dibrugarh.	62		12	
		BSNL, Dibrugarh.	281		54	
		Total		466		89
7.	GRAND TOTAL			1697		323

Method of Data Collection

A structured close-ended questionnaire was distributed among the sample respondents for collection of primary data; secondary data has been collected from various related literature and official records and publications of the selected organizations.

Method of Analysis

The Relative Frequencies of the parents' perceptions about the distinction between ethical and legal practices in marketing of higher education were calculated and the perceptions were compared. The hypothesis is judged on the percentages of perception of the parents as the data are obtained on nominal scales based on qualitative information.

Overall comparison of Unethical/Ethical & Legal/Illegal Practices in Marketing of Higher Education:

The Relative Frequencies, of the responses collected for attaining the objective set, have been converted into percentages and presented thus in **table 2**.

Table 2: Overall comparison of Unethical Vs Legal Practices in Marketing of Higher Education

Sl. No.	Marketing practices in Higher Education	Ethical (%)	Unethical (%)	Legal (%)	Illegal (%)
1	Practice of buying & selling Degrees	2	98	2	98
2	Practice of Bribing and selling of exam papers	0	100	0	100
3	False Affiliation & Accreditation of Institutions	0	100	1	99
4	False statement about their campus & infrastructure	1	99	8	92
5	Institutions aiming only in making profit	4	96	23	77
6	Taking capitation fees during admission	15	85	26	74
7	Taking full fees in advance & not return if the student is not joining	5	95	17	83
8	Advertisements made to attract the society	49	51	61	39
9	Interface between industry & institution during the course	75	25	80	20
10	Uniformity in the admission norms	88	12	90	10

Source: Compiled from survey data

Interpretation of table 2:

❖ It has been observed that the first seven practices mentioned in table 2, are believed to be both unethical and illegal by above 70% of the respondents. This indicates that an alarmingly large number of practices of higher educational institutions are unethical by nature as against only a small proportion of practices that are ethical by nature.

Among the seven practices found to be highly unethical as well as illegal, laws are yet to be mandated for the following two:

- ✓ **Practice of Buying and Selling Degrees and**
- ✓ **Practice of Bribing and Selling of Exam papers:**

As for the rest of the five practices found to be highly unethical as well as illegal, laws are already in force:

- ✓ **False Affiliation and Accreditation of Institutions:** There are several regulatory bodies like National Development Council (NDC), National Assessment and Accreditation Council (NAAC), etc. for maintaining the quality of higher education and for governing the affiliation and accreditation of institutions. The “National Authority for Regulation in Accreditation of Higher Educational Institutions Bill, 2009”, makes accreditation of all the higher educational institutions mandatory.
- ✓ **False statement made about their campus and infrastructure:** The guidelines given by Advertising Standard Council of India (ASCI) does not allow any educational institutions to make false statements relating to any facility or infrastructure while advertising. In this respect, the Bill proposes a new law i.e. Educational Tribunals Act, 2010, which prohibits advertisements that are not based on facts about their campus and infrastructure. Any institution found guilty of publishing any false or misleading matter in their advertisement shall be liable to a penalty, which may extend to fifty lakh rupees.
- ✓ **Higher Educational Institutions Aiming only at profit making:** Private higher educational institutions are viewed as business enterprises by the stakeholders as they have invested huge amount of money, time and resources⁶. Some of the instances of profit making in Higher Educational Institutions are:
 - In 1957, the Supreme Court had taken a stance against for-profit higher education in its judgement in the case of State of Bombay Vs. R.M.D. Chamarbaugwala (SCR 874)⁷.
 - Similarly, a tough stand against for- profit higher education was also taken by the court in the Unni Krishnan case where the private institution was found operating without appropriate infrastructure⁸.
 - In a recent case of SVS Medical College of Yoga and Naturopathy and Research Institute of Tamil Nadu, which was found operating without appropriate infrastructure and due to which three girl student’s committed suicide, the Court is found to be strictly enquiring into the matter⁹.

✓ **Taking Full Fees in Advance and not refunding the same if the Student does not join:** This practice has been taken up by the UGC, which has notified universities and other higher educational institutions in India that indulging in the stated practice would be penalised. However in this regard AICTE has stated that if the student is withdrawing before starting of the course than the vacant seats can be given to the candidates in waiting. The institutions after deducting the processing fee and other necessary deductions from the students must return the fees collected from the withdrawn student¹⁰.

✓ **Taking capitation fees during admission:** The practice has been banned by the Apex Court in 2003, but in India capitation fees till rules the admission of medical seats in private colleges¹¹.

The above- discussed unethical practices are proposed to be banned by enacting several legislations from time to time. Some of the bills pending in the parliament in this regard are as under:

- The Private Professional Educational Institutions (Regulation of Admission and Fixation of Fee) Bill 2005
- Admission and Fee Structure in Private Aided and Unaided Professional Educational Institutions, 2007
- The Prohibition of Unfair Practices in Technical Educational Institutions, Medical Educational Institutions and Universities Bill, 2010

❖ Moreover, it has been observed that the two practices of the higher educational institutions as mentioned in table 2 are considered as both ethical and legal by above 70% respondents.

The practices which are ethical and legal according to parents are:

✓ **Uniformity in the admission norms:** Such practice helps the students to get equal opportunity for admissions in any institute across the country inspite of their religion, caste, etc.

✓ **Interface between industry & institution during the course:** Such practice helps the students to get jobs in soon after the completion of their courses.

However, there exists no laws, till date, that directly related to these two practices so as to emphasise upon and justify the respondents belief regarding their being legally correct.

❖ With regard to the practice of '**Advertisements made to attract the society**' by the higher educational institutions, a mixed response was observed as – while 49% of the

respondents considered it to be ethical, 51% considered it unethical; on the other hand, while 61% of them believed it to be legal, 39% believed it to be illegal. The private higher educational institutions are not prohibited by law to advertise their courses, infrastructure and other facilities in order to attract the students provided they give true representation of facts and create awareness among the parents and students about the alternative choices among the courses and institutions. Therefore, based on the existing laws in this regard too, this practice cannot be regarded as totally unethical or illegal.

- ❖ Thus, in sum, it can be observed that the parents are unclear about ethical/ unethical and legal/ illegal practices in the education market as some of the practices are legal according to law but they have been rated illegal by the parents and visa-versa.

Major Findings of the Study:

The findings thus derived indicate the following:

- ❖ It has been observed that among the practices mentioned, only two practices out of 10 marketing practices of higher educational institutions i.e 20% have been considered both ethical as well as legal by the parents. However, it has been seen that there are no direct laws relating to the ethical practices either supporting or negating them. But by and large, they can be considered to be ethical as they do not have any negative side effects, if practiced (as per parents' opinion).
- ❖ It has been found that seven practices out of 10 marketing practices of higher educational institutions i.e. 70% have been considered unethical as well as illegal by the parents. However, a look into the related laws indicate that while there are laws framed for some of the unethical practices as found, for some others, there are laws yet to be passed in the respective forums.
- ❖ Moreover, it was noticed that the parents were not clear whether the practice of **“Advertisements made to attract the society”** is ethical or unethical and legal or illegal. However, it has been found that regarding advertisements, there are strict directions made in the ASCI Guidelines for Advertising of Educational Institutions and Programs.
- ❖ Finally, it was observed that there is a difference in the awareness level of the parents about ethical/ unethical and legal/ illegal practices in the education market as some of the practices are legal according to law but they have been considered illegal by the parents and visa-versa.

Inference to the Hypothesis

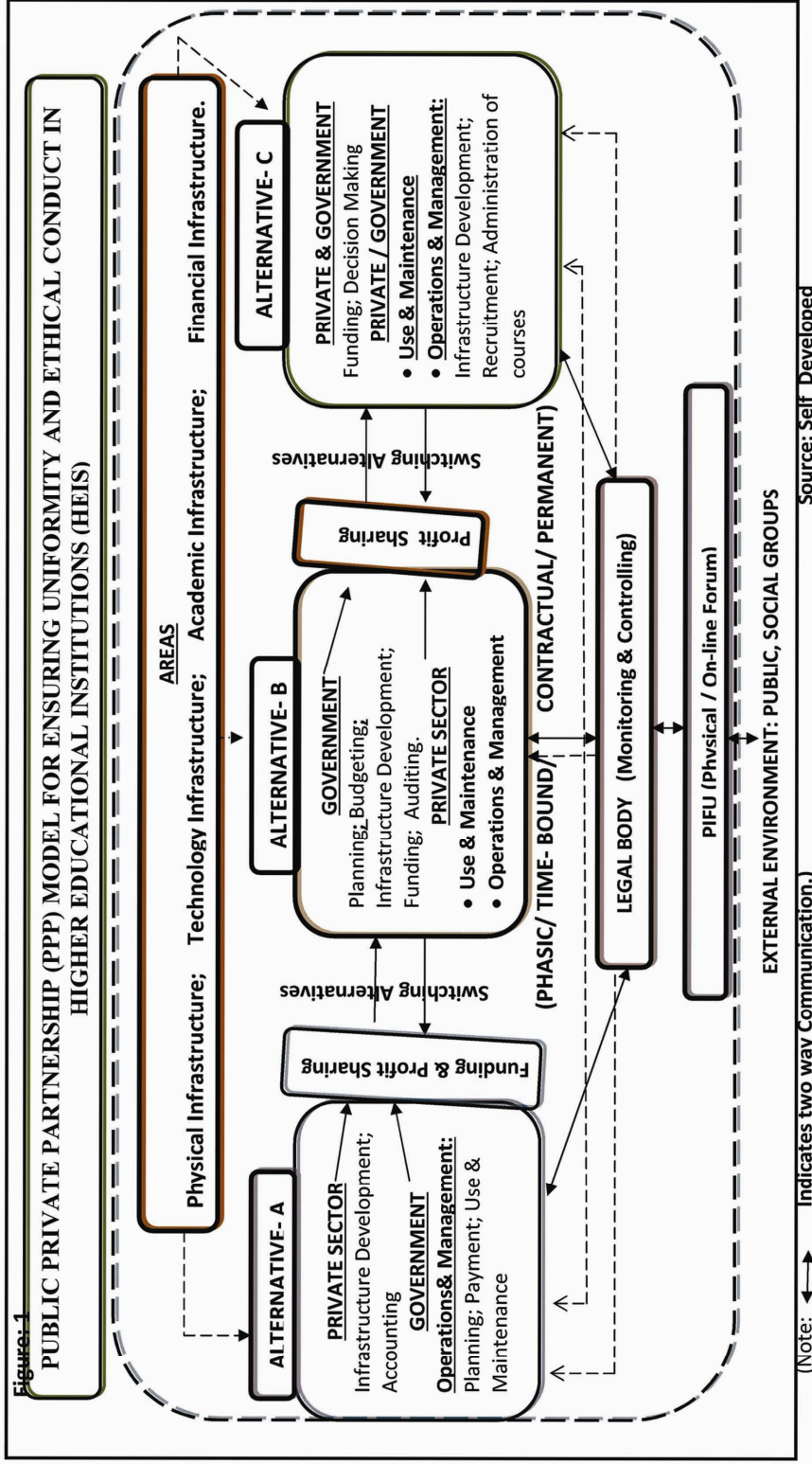
It has been found that parents are not clear about the distinction of ethical practice and legal practice in the higher education market. According to them, the practice which is ethical is also legal and the practice which is unethical is also illegal. But many practices are such that they are legal by law inspite of being considered as unethical by the parents. **Thus the findings are not in conformity with what has been hypothesized**, i.e. “parents & wards are clear about the distinction between ethical & legal practices in marketing of higher education”.

Suggestions:

The UGC recommended Public Private Partnership (PPP) Model by the K.B.Pawar Committee constituted by the UGC¹² has inspired the author to suggest a PPP Model for ensuring uniformity and ethical conduct in Higher Educational Institutions (HEIs).

❖ The Suggestive Model

Based on the afforested committee guidelines the author has made an attempt to create a detailed model for application in the Higher Education System for Ensuring Uniformity and Ethical conduct in Higher Educational Institutions (HEIs). The model has three alternative courses of action, each with in-built contingency management systems. In case of inefficiency or failure of any of the alternatives within the target period/ resources, adoption of another alternative should be flexibly possible.



A Discussion of the Model Suggested in Figure 1

Alternative A:

One way of creating Public Private Partnership (PPP) may be as follows- Government engages in all possible planning dimensions and preparations of a blue- print for infrastructure development and operations and funding for the development of infrastructure. It outsources activities related to infrastructure development to private firms having expertise in building and construction, installation of digital systems, supply and setting up of libraries, etc. as and when required and makes due payment. The private players in turn, develop the required infrastructure and submit accounts required for payment and venture out of the project. Maintenance and use of the so- developed infrastructure and overall administration and operation of the educational institutions rests with the government.

OR

The private party may fund as well as develop the infrastructure required for the government to run its educational operations, in return, sharing the profits of the venture for the joint effort. Every discussion and profit sharing done together will avoid business practices and violation of acts and practices will be minimized. For example, the physical infrastructure will be constructed by the private party on contractual basis with the contractors/ builders in a pro- active manner to give physical frame to the structure.

Alternative B:

In case of **Alternative B** the PPP may be created as follows- the government engages into planning, budgeting, infrastructure development, funding and auditing, whereas operation and management of the educational activities will be outsourced to the private party so as to ensure that there is a profit orientation also, along with government's welfare orientation. The profits generated from the educational operations of the institutions be shared by both the private and the government parties being proportionate stakeholders and contributors in the venture. Work division and profit share taken together will avoid interference in work and operations, avoiding disputes and minimizing violation of acts and practices. For example, the technology infrastructure like, digital- labs, on-line mechanisms, computer software, etc, can be develop by contracting with firms expertise in the field of technology and software like, software companies, etc. and its upgradation shall be taken care by the private party.

Alternative C:

In case of **Alternative C** the creation of PPP may be as follows- the funding for infrastructure development as well for all other operations and decision making will be jointly done by the government and the private sector. The operations and management will be either look upon by government or private sector.

The Funding for the whole process and all the decisions taken will be done in pre-decided proportion by the combined members of both the parties. Every discussion and important decision taken together will avoid misunderstanding and violation of acts and practices will be minimized. For example, the private party can develop the academic infrastructure by contracting with the private publishers, book retailers, e- literature provider, projector manufacturing companies, etc required for imparting education. The financial infrastructure can be arranged through the private investors interested in education invested but are without experience and expertise.

LEGAL BODY: There will be a legal body where the private party lawyer and government lawyers will be the members so that the decisions taken will consider all the legal aspects of private and government institution which will avoid unethical practices in education sector. Phase- wise every activity evaluated by the party concern will again be monitored and approved by the legal body to stop any kind of corruption. In case of any malpractice under notice, the same have to be challenged and required actions should be taken by the legal body.

A PUBLIC INFORMATION FEEDBACK UNIT (PIFU) should be constructed so that the report about the activities of the higher could be placed in it and its accessibility should be ensured so that the parents, students and other can know about all the affairs related to education. There should also be a feedback system either online or manual in the form of magazine of education so that they can provide their thoughts and ideas through column, article or any complains which would help in improving the higher education structure creation of quality, knowledge and skill. The cases, decisions and other proceedings of the legal body also needs to be highlighted in the publications of the PIFU. The external environment such as people, social groups, etc. should be made aware about the system of feedback, through providing magazines to the school and college libraries, to organisation, industries with the facilities of subscription so that it will be popular among the masses and they can give their comments through it. This has been designed drawing inspiration from the

travel industry wherein reviews about the features, operations, etc. of any party to a travel package (i.e. hotel, airlines, etc.) can be found as separate from the total package in certain common websites designed for the purpose.

Conclusion

The most acute weakness plaguing India's higher education system is a crisis of governance, both of the system and of individual institutions. There are laws framed as well as enforced for controlling some practices and even various committees and experts have made proposal to be passed for the rest of the practices in the higher education sector. The need of the hour is to have a strong regulatory system which could control the malpractices increasing at an alarming rate in this sector.

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A BIDIRECTIONAL STUDY ON ADVERTISER'S PERSPECTIVE TOWARDS DESIGNING FMCG ADVERTISEMENTS AND VIEWERS' RESPONSES

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ABSTRACT

Transparent marketing communication through an effective advertising campaign unites the advertisers' point of view with the viewers' attitude and acceptance. Based on a bidirectional study and taking an impact index pyramid into consideration, the study aims to comprehend the advertisers' message along with the viewers' understanding of the marketing communication being displayed through the advertisements taken for the study. The result of this study aims to add on to the existing body of literatures by creating a link between the advertisers' intentions and the audiences' acceptance towards various brands under consideration.

KEY WORDS: Advertisement, Marketing communication, Bidirectional, Advertising message

INTRODUCTION

Advertisers' objective in designing an advertisement at all times revolves around the understanding level of the audience. An inspirational advertisement caters to audiences' attention, making the brand popular and the message, a meaningful one. A transparent marketing communication acts as a bridge between the advertisers' idea and the audiences' acceptance towards the advertisement. An advertisement can be termed successful when it is supported with fresh, remarkable and extraordinary messages which is first understood by the viewers', then retained by them and finally which instigates them to opt for final purchase. The patronage of these customers in buying the products/services that is being advertised fulfills the advertisers' objective of designing various advertisements for the mass audience.

LITERATURE REVIEW

Advertisements persuade consumers in their purchasing behavior at least once in their lifetime. Persuasiveness is the outcome of belief and trust. Persuasive ads first get exposed to the viewer who finally gets attentive towards it, supported by effective strategy, creativity and execution. (Bashir.A & Malik.N.I (2009))². In addition, advertisement attracts towards the preference and choices to influence the consumer buying behavior, irrespective of high or low income group. In a nutshell, advertisement appeal and its effectiveness correlates positively and people form attitudes towards objects on the basis of their beliefs, perception and knowledge about these objects. (Rahman (2012))³. Advertisements also aids youths in decision making by providing information of the product and thus saves time while shopping. According to the youths, advertisements play a dominant role in buying a new product, possess great entertainment value, play the role of a great communicator and are effective educators. (Colaco H.R, Melo F.R & Tiwari A.K.)⁴.

For an organization to succeed in this competitive environment, there is the need to manage the marketing communication system for efficient performance as well as for the promotion of sales. (Odunlami. I.B. and Ofoegbu. O.E. (2011))⁵. Integrated marketing communications involves mixing and matching different communication options to establish the desired awareness and image in the minds of the consumers. (Keller K.L (2009))⁶. Any event organized by the organization attracts the customers for impulse buying. Retailers should implement various advertising schemes and adopt eye catching visual merchandise and window display strategies to attract customers and thus to promote impulsive buying behavior of the customers. (Saraswat R. & Prakash. G. (2012))⁷. Media plays a key role in bringing awareness of different brands and their availability at an accessible price for the

² Bashir.A & Malik.N.I (2009). "Effects of Advertisement on Consumer Behavior of University Students". Proceedings 2nd CBRC, Lahore, Pakistan. November 14, 2009

³ Rahman M.N (2012). "Impact of Advertisement: An Empirical Study of FMCG Products in KSA". Asian Journal of Multidimensional Research. Vol. 1, Issue 4, ISSN 2278-4853, September 2012, pp 1-15

⁴ Colaco H.R, Melo F.R & Tiwari A.K. "Customers' Attitude Towards Advertisement in Goa: An Analytical Study". A Refereed Quarterly Journal Vol. 4, Issue 1, Udaipur (Raj.), pp 94-104

⁵ Odunlami.I.B. & Ofoegbu.O.E. (2011). "Effect of Marketing Communication in Promoting Organizational Sales: A Case study of Sunshine company". Journal of Emerging Trends in Economics and Management Sciences (JETEMS). 2(5), (ISSN:2141-7024), pp 408-412

⁶ Keller K.L (2009). "Building strong brands in a modern marketing communications environment". Journal of Marketing Communications. Vol.15, Nos. 2-3, April-July 2009, pp 139-155

⁷ Saraswat R. & Prakash. G (January-June 2012) "Impact of Advertising Scheme on Impulse buying behavior of Consumer in: An Empirical Study of Noida City". Mangalmay Journal of Management and Technology. Volume 6, Number 1, pp 22-29

rural market and thus has made the organizations successful in making this segment their target customers. (Bhattacharya & Bhadra)⁸.

But it has been observed that, FMCG advertisements while introducing new products/brands are ineffective in creating responses among the consumers. More effort in terms of the message content, strategies to seize the consumers' attention and high level of creativity is needed to make the FMCG advertisements more effective in creating responsiveness among its consumers. (Pongiannan.K. & Chinnasamy.J. (2014))⁹

Moreover, single country/territory studies, which involved only one Asian country/territory (mainly the Chinese mainland, South Korea, Japan and Taiwan) was the most, frequent type of studies in the field of advertisements. From advertising researchers' perspective, more attention should be given to emerging markets such as India and Vietnam, which are 'understudied' over the past 20 years. With the increasing impact of globalization on the business, communication, and advertising sectors in the world; first it is essential for more multiple-country/territory studies in the future. Second, more attention should be given to areas like advertising portrayals, creative elements, celebrity endorsements, consumer motivation and consumer learning/association." (Cheng H. & Kim K.K. (2010))¹⁰.

The market of FMCG products demands a cutthroat competition day by day which demands more creativity in FMCG advertisements. Also there exists a need of frequent studies in the various advertising area in this part of the world. As a result, need arises to study the impact of advertisements of the FMCG products in relation to the marketing communication context on the buying decisions of the consumers.

SCOPE OF THE STUDY

With a bidirectional perspective and a Case study approach, this study aims to focus on the advertisers' intentions while designing an advertisement of FMCG products and the customers attitude leading to final purchase.

⁸ Bhattacharyya.K. & Bhadra. B. (2011) "The Role of Media In Influencing Customers' Brand Choice: Some Observations". Global Media Journal- Indian Edition, Summer Issue, pp 1-10

⁹ Pongiannan.K. & Chinnasamy.J. (2014). "Do Advertisements for Fast Moving Consumer Goods Create Response among the Consumers?- An Analytical Assessment with Reference to India". International Journal of Innovation, Management and Technology. Vol. 5, No. 4, August 2014, pp 249-254

¹⁰ Cheng H. & Kim K.K. (2010). Research on advertising in Asia: a critical analysis of the articles published in major advertising and communication journals, 1990-2009. Asian Journal of Communication. Vol. 20, No. 2, June 2010, 248-263.

OBJECTIVE OF THE STUDY

This study aims to fulfill the following objectives: -

1. To study the advertisers' message projected through their advertisements, selected for the study.
2. To study the respondents' understanding level regarding the communication content shown in media advertisements of FMCG products.

METHODOLOGY

The people residing in Sivasagar district, Assam were studied under Case study approach. In order to fulfill the bidirectional perspective, the respondents were divided into two categories. The first category comprised of seven (7) leading advertising agencies having nationwide presence and that were engaged in media advertisements of FMCG products through television. There were total twenty one (21) brands for the selected seven (7) advertising agencies. The second category of respondents was television viewers from both urban and rural areas of Sivasagar district, Assam. At first an online questionnaire was served to the 7 advertising agencies. Next, a structured schedule was being provided to the viewers for filling up their responses, once the advertisements were viewed directly on the palmtop of the researcher. Through Judgemental Sampling, the data were collected from a sample size of 200 respondents between the period 2014-2015.

For the study, the responses of each Statement were measured through Impact index and the results were presented in percentage. The research was analytical as well as descriptive in nature. The formula for Impact Index used in the study is as below:

a. $Impact\ Index = (Weighted\ Score / Maximum\ Score) * 100$

b. $Weighted\ Score = w_1 * n_1 + w_2 * n_2 + \dots + w_5 * n_5,$

Where,

- w_1 to w_5 = weightage given to each responses per statement ranging from 1 to 5. The highest being 5 and 1 being the lowest.
- n_1 to n_5 = no. of respondents responding to a statement with respective weightage

c. $Maximum\ Score = Highest\ rate * N$

Where,

- N = Total no. of respondents

The scale of Impact Index that was taken into consideration is as follows:

0-25% No Impact

25-50% Some Impact

50-75% Moderate Impact

75-100% High Impact

ANALYSIS AND FINDINGS

I. Advertising Agencies' Viewpoint:

Through the online questionnaire, the advertising agencies were asked to respond in factors like; advertising appeal, marketing information and communication through advertisements, campaigns, message content, media plan, understanding of target audience, etc. From the responses which were within the high impact range of 75-100, it has been observed that the agencies consider advertising as a medium of sharing information and entertainment and thus assists in getting touch with a broad base of population. The prime idea of any advertisement is to convey the relevant ad message to the audience by giving equal importance to advertising appeals. Creativity in advertisements lies with the proper execution of appeals which may vary from emotions to humor or from music to reality. While designing an advertisement, appeals are arranged in a way where the understandings of the rational viewers are achieved along with the acceptance by the emotional viewers.

By observing the responses from the moderate impact range of 50-75, it can be inferred that, "While it is obviously important for an ad to have a meaningful appeal or message to communicate to the consumer, the manner in which the ad is executed is also important."¹¹ In addition to balanced advertising appeals, it is apparent from the responses of the agencies that the advertising message, the product attributes and simplistic approach should be in accordance with the viewers' understanding. Humorous advertisements are one of the best ways to entertain the viewers', as the element "humor" is understood and recalled by every level of viewers' irrespective of caste, creed, status or literacy level. It is obvious that in order to create a niche in the market, people should know a brand, understand the message and finally be able to relate themselves with the brand being advertised. Thus newer brands require more frequencies of display in Televisions with simplicity in their concepts. Also a media plan is frequently assisted by other supporting tools for effectively communicating the message to the target audience and an advertising message is acknowledged by the flow and the content of the message and not by any kind of arguments. Though analogous thoughts may be repeated in advertisements, the advertising agencies endeavors to identify the changing requirements and

¹¹ Belch G.E, Belch M.A & Purani K, "Advertising and Promotion An Integrated Marketing Communications Perspective", 9e, pp 371

tastes of the customers' in order to remain at par with other competitive players in the market. An advertisement demands to reveal positive and true facts / figures and product information to the audience, but in certain scenarios and with their moderate responses, the advertising agencies portrays that during certain instances they fail to accurately represent their strategies to the public. Celebrity endorsement can also be termed as one of the major promotional strategy for positioning a brand in the market. Additionally, while designing various advertising campaigns, the agencies do get highly influenced by various demographic and socio economic factors like; "Age", "Gender", "Occupation" and "Education".

II. Viewer's Viewpoints:

1. Appy Fizz¹² (Apple juice drink)- The main idea behind this campaign was to endorse the brand with a well known celebrity "Saif Ali Khan". The campaign was successful in communicating the product information to the audience. The flow of the campaign was in accordance with the appeal, thus making the advertisement pleasurable to watch. The responses infers that the humor element could have been more balanced due to which the ad message was at times subsided which finally resulted as an obstruction in recalling of the brand. The brand "Appy Fizz" is new to the audience of Sivasagar, and thus the viewers' opted for more frequencies on Television. The demographic factors were not given prime importance due to which it got moderate acceptance by the spectators. This brand is highly recalled only through the image of the Celebrity /object and the punch line of the advertisement. As a result, the moderate responses of the viewers' depicted that this campaign was fairly accepted by both the urban and rural viewers' of Sivasagar district, Assam.

2. Godrej Expert¹³ (Hair colour brand)-Through this campaign, the advertisers' motive was to popularize the hair colour brand among the audience. Until the time of this campaign, hair colour was considered an uninteresting product where people felt shy to purchase or use hair colour in open. But this campaign re-established the hair colour brand as interesting, open and trendy for the society. Entertaining quotient persisted in this campaign resulting in a good understanding of the ad message among the audience. The appeals and the message possessed a harmonizing effect among the public. Also the frequency of this campaign in

¹²Available:<http://www.campaignindia.in/Video/293379,saif-ali-khan-hangs-out-with-appy-fizz-in-new-campaign.aspx> (February 21, 2014).

¹³Available:<http://www.campaignindia.in/Video/289133,godrej-expert-tvcs-aim-to-dispel-embarrassment-about-hair-colouring.aspx> (February 21, 2014).

various mediums was applauding. Even though there existed transparency in the marketing message of this campaign, the rural people were more inclined to this campaign than their urban counterparts. As far as demographic factors are considered, the responses interpret that both the rural and urban viewers are positive about the campaign. As a result the moderate impact scores leads to reasonable acceptance of the brand as the communication through the campaign was well targeted and clear in its deliberation.

3. Mango Frooti¹⁴(Mango flavoured drink)– The campaign was designed to present the experience of having a tasty and mouth-watering mango drink in an appealing manner. The high impact response from the audience signifies the advertisement to be very entertaining and informative. The humor element associated with the advertisement complements the message, the celebrity, music and the punch line of this campaign. This interesting advertisement positively pinches both the urban and the rural viewers as they believe that the demographic factors were taken into consideration while designing this campaign. Frequency of this campaign acted as a benchmark in creating an awareness of the brand and thus in its recalling. In one piece, this advertisement possessed a thriving concept in attracting viewers' from various background and culture.

4. Sunfeast Dark Fantasy biscuits¹⁵ (Dark chocolate biscuits)–The representation of this advertisement was to create a flight of imagination where after having Sunfeast Dark Fantasy biscuits; an individual reaches an environment of delusion. All the responses were in the moderate impact range of 50-75. This deduces that the ad message and the communication content were not in accordance with the understanding level of the audience which hampered in the acceptance of the campaign. The flow of the campaign was too dramatized and thus it could not achieve a remarkable response in the real world.

5. Amul¹⁶ –Connecting both rural and urban India was the prime intent of this advertisement. The advertisement displays the delivery of milk to the urban areas by the rural women on a daily basis which finally leads to an uplifted rural society. The big and one of the most established brand in India was widely accepted by the viewers of Sivasagar district and this can be seen through the high impact response from the audience. This entertaining campaign delivers significant information of the brand with a very harmonious music at the back. Both

¹⁴ Available: <http://www.campaignindia.in/Video/335565,frooti-ropes-in-shahrukh-khan-underlines-fresh-and-juicy-drinks-drool-quotient.aspx> (February 19, 2014).

¹⁵ Available: <http://www.campaignindia.in/Video/326992,sunfeast-dark-fantasy-takes-indulgence-further-in-new-film.aspx> (January 29, 2014).

¹⁶ Available: <http://www.campaignindia.in/Video/277886,draftfcb-ulka-recreates-the-magic-of-manthan-for-amuls-new-tvc.aspx> (January 15, 2014).

the rural and urban viewers' were of the opinion that as "Amul" is an established brand, current frequencies on Television is up to the mark and no new and more number of frequencies is required in other mediums. The flow of the campaign was well displayed keeping the understanding level of the viewers' and thus making the campaign an admired one among the audience.

6. Servo¹⁷ (Engine oil brand)– Depicting the well known game "Cricket" in a normal day incident in relation to an engine oil brand was the prime motto of the campaign. But the moderate impact scores portrays that the information and the concept could not be displayed and as a result the advertisement was less informative and compelling. While designing the advertisement, the demography of the viewers' and their understanding was ignored restricting its acceptance by the people. Only when a person understands an advertisement, it is likely that he/she opt for purchase. But in this case, the element of 'understanding' itself was merely achieved.

7. Pepsi¹⁸ (Carbonated Soft drink)– The campaign possessed full of high music, visuals and a chaotic approach without focusing more on the product information and benefits. The punch line focused on the excitement of the new generation youths and their lifestyles. The campaign was well recognized by both the urban and rural people but unexpectedly the rural people were more appealed towards the brand than the urban society. The celebrity endorsers acted as a big source to summon up the brand. According to the rural people, music associated with the campaign, frequencies, etc. were in balance with the demographic factors which instigated them in reacting positively towards this campaign.

8. Kitkat¹⁹ (Chocolate covered wafer biscuit)–Creative agencies designed this campaign with a view that a break in anyone's life is necessary and this may bring a smile on someone's face. Even if the idea of not missing out on a break was well executed through this advertisement, only moderate responses were apparent from the scores. Rural people mentioned that music and humor were well accompanied with each other. This brand also doesn't always precisely construe facts and objectives of the company without giving much importance to demographic variables. Unfussiness could be observed in the advertisement with entertained spectators, but purchasing moves could not be seen among the audience.

¹⁷ Available: <http://www.campaignindia.in/Video/309767,servo-adds-life-to-toys-with-a-touch-of-cricket.aspx> (February 03, 2014).

¹⁸ Available: <http://www.jwt.com/ohyesabhi> (December 12, 2013).

¹⁹ Available: <http://www.jwt.com/dancingbabies> accessed on 12/12/2013(December 12, 2013).

9. Kurkure²⁰ (Brand of corn puffs)–This advertisement focused on varying personalities yet traditional values and its cohesiveness of a modern Indian family. The mid range response from the viewers’ signifies the limited acceptance of this brand, even if Kurkure is a very popular brand in the market. Celebrity endorsements and attention-grabbing punch line could stimulate the urban audiences’ mind but it could not prompt them in their purchase. The same behavior was observed in case of the rural spectators even if they understood the concept. Factors like; appeal, requirements, preference, occupation and literacy failed to go with the flow of the campaign.

10. Thums Up²¹ (Carbonated Soft drink)–Masculine attitude with a gallant approach by a big named celebrity was being displayed in this campaign. It has been observed that both urban and rural observers were motivated with this drive but the audacious and brave attitude of the celebrity as well as the striking punch line could cater only the urban community. In comparison, the rural customers were more in favor of the music, ad message, frequency, humor and consideration of demography in this advertisement. However, purchase of this brand by the people was not praiseworthy.

11. Maaza²² (Fruit drink brand)– The design of this campaign was to communicate the society with the idea of having mangoes for all season in the form of the fruit drink brand “Maaza”. This campaign was a winner and the same can be inferred from the high impact scores in the form of viewers’ responses. The message was well delivered to every kind of audience ranging from young to old, literate to illiterate and rich to poor. On one hand, product information was transparent, but on the other; the appeals such as emotions, music, humor, simplicity and accuracy of facts and strategies were not accepted by the viewers with open arms. A balance between humor and music could not be achieved, but even then, the campaign was acknowledged by the audience.

12. McCain Foods²³ (Ready to make frozen snacks)–This advertisement portrayed the skills of the modern women in an optimistic manner. The ways in which the contemporary women manage the personal and professional life was well displayed in the campaign. The marketing message through the advertisement was exceptionally thriving but due to lack of

²⁰ Available: <http://www.jwt.com/tedhahaiparmerahaifamilylaunch> (December 18, 2013).

²¹ Available: <http://www.campaignindia.in/Video/334396,thumbs-up-scripts-a-thundering-toofani-story-with-salman.aspx> (December 22, 2013).

²² Available: <http://www.campaignindia.in/Video/289499,maaza-pitches-itself-as-the-har-mausam-aam-in-new-tvc.aspx> accessed on 17/12/2013(December 17, 2013).

²³ Available: <http://www.campaignindia.in/Video/327435,karisma-kapoor-celebrates-the-mccain-moments-in-her-daily-life-jhatse.aspx> accessed on 07/02/2014(February 07, 2014).

proper management of factors like; appeal, simplicity and representation, medium impact scores from both the urban and rural communities has been observed.

13. Britannia Tiger²⁴ (Biscuits)–The notion of nutritional diet to children was suppressed due to the celebrity endorsement and inclusion of one of the most popular music track. The medium impact scores interpret average influence on the viewers’ purchase. Though the ad message was clear in accordance with the benefit on consuming this product, but still, the ad was unable to cater the audience’s attention.

14. Dabur Hajmola²⁵ (Digestive tablet)–As the saying goes “Sharing is loving”, this campaign focused on the same. From the average response of the respondents, it was noticeable that people identify themselves with the theme and fairly accepted the advertisement. Purchase of this brand was not extraordinary but the spectators felt the advertisement to be enlightening and instructive with a modest thought for the society.

15. Surf Excel²⁶ (Detergent powder)–This campaign twinkled with the idea of virtue and uprightness among people all the way through a group of small children in a playground. The high impact scores clearly showcase that the society enthusiastically accepted the campaign. The ad message was in accordance with the theme and the campaign was fully packed with deepest emotions. This campaign was a full proof pack of entertainment, product information and humor which made the advertisement an informative one. This has finally resulted in final purchase of the brand among the audience.

16. Cadbury Dairy Milk Silk²⁷ (Dairy chocolate)–A spellbinding and enthralling enchant towards chocolate was the plan behind this advertisement. As a general perception, chocolate is most liked by the urban community. But astoundingly in the case of this brand, as per the impact scores it has been observed that the rural community were more jaw dropped by viewing the visuals of this campaign. In case of emotions, humor, simplicity, accuracy of facts, celebrity endorsements and the demographic variables the response from both the communities were parallel to each other. In spite of a good purchasing history of Dairy Milk Silk chocolates, the overall reaction of the viewers towards this ad was moderately acknowledged.

²⁴ Available: <http://www.campaignindia.in/Video/323838,britannia-tiger-moves-from-energy-to-growth-positioning-with-salman-khan.aspx> (January 19, 2014).

²⁵ Available: <http://www.campaignindia.in/Video/326085,hajmola-breaks-into-a-fun-gig-with-brand-ambassador-ajay-devgn.aspx> (January 11, 2014).

²⁶ Available: <http://www.campaignindia.in/Video/309912,surf-excel-says-dirt-is-good-righteously.aspx> (January 31, 2014).

²⁷ Available: <http://www.campaignindia.in/Video/335563,cadbury-promises-softer-smoother-silkier-dairy-milk-silk.aspx> (February 03, 2014).

17. Fevicol Marine²⁸ (Adhesive)–Repositioning of the brand as a waterproof adhesive with certain amount of wittiness was well executed through this campaign. The campaign possessed loads of entertainment, but in rest of the factors they were little bit doubtful in accepting the ad message with poise. “Strength” and “brand assurance” were the two factors which were displayed in a mirthful manner which was even understood by the communities but creditable purchasing attitude couldn’t be seen. In comparison, the rural society was more engrossed with the campaign. As a whole, the advertisement was out of the ordinary to watch, but in case of purchase, same commitment was not evident.

18. Gems Surprise packs²⁹ (Chocolate balls brand)–In this campaign, the advertising theme was not in accord with the thoughtfulness of the audience. Communication and the visuals were abstract and the people would hardly understand the main concept behind this advertisement. The appeals, information and meaning lacked in proper execution due to which both the urban and rural people were way behind in positively accepting this brand.

19. Sona Chandi Chyawanprash³⁰ (Herbal formulation with health benefits)–*The benefits of consuming a herbal formulation with a proportion of gold and silver in it, was the foremost intention in this advertisement. In spite of a varying response, the rural society were more positive about this campaign.* In most of the aspects like; product information, entertainment, marketing message and on level of clarity, this ad has excelled in the eyes of the rural viewers. *However, this promotional initiative could moderately stimulate the purchasing senses of both the viewers.*

20. Rupa Frontline (Brand of vests)–The main thought behind this drive was to encourage the people to wear the particular brand of vests in association with the burning topic of “voting”. The idea of boosting confidence of the people through this brand was not a huge success in this part of India. The visualizations didn’t prioritized few of the main concepts like; transparent communication, product benefits, appeal and understanding of the society.

21. Anchor³¹ (Brand of home automation products)–Focusing on the complete range of Anchor products in relation to the modern society was the prime objective of this campaign. The mid range impact scores interprets that the viewers’ were less interested with the

²⁸ Available: <http://www.campaignindia.in/Video/315901,a-boatman-benefits-from-fevicol-marine-in-new-ad.aspx> (February 26, 2014).

²⁹ Available: <http://www.campaignindia.in/Video/327254,age-no-bar-for-cadbury-gems-or-its-surprise-toys.aspx> (February 03, 2014).

³⁰ Available: <http://www.campaignindia.in/Video/324619,sona-chandi-chyawanprash-targets-mothers-communicates-functional-benefits.aspx> (February 15, 2014).

³¹ Available: <http://www.campaignindia.in/Video/329204,rupa-frontline-urges-people-to-vote-moves-a-step-ahead-of-humour.aspx> (February 20, 2014).

advertisement. The campaign failed to entertain the audience and simplicity in the concept was not to be seen in the entire duration of the advertisement. Transparency and product information as well as benefits were merely displayed in the campaign. As a result, the audience hesitated to show a positive response towards the advertisement.

DISCUSSION

An advertisement plays an eminent role in creation of positive perception of a brand among the society. The creative's put every effort to design an advertisement which is understandable and enjoyable to the audience. A happy and contented customer is always a loyal customer. The understanding of the society and its changing needs and demands is the ultimate priority in designing an advertisement. It is because, customers' purchase a brand, only when they first understand the advertisement and next they believe that the brand will satisfy their wants. The study discloses that the advertising appeal, values, culture, message and plainness are considered by the advertising agencies in every phase of design of a campaign. When these factors along with frequencies of display and viewers' understanding level are mixed together, an advertisement outshines in the market.

Among the selected brands for the study; Appy Fizz, Mango Frooti, Amul, Kitkat, Maaza, Cadbury Dairy Milk Silk, Fevicol and Surf Excel, possessed a unified approach among the audience making the campaigns a sensation in the market.

Advertisements like; Godrej Expert, Kurkure, Britannia Tiger, Dabur Hajmola and Anchor could not maintain a sense of balance of the factors like; product information and benefits, appeals, marketing message, clearness in the flow of the advertisement. As compared to brands like Servo, Sunfeast Dark Fantasy, Pepsi and Anchor; ease in an advertisement was seen only with the acceptance of the brand Kurkure and Surf Excel. Brands like; McCain Foods, Surf Excel, Cadbury Dairy Milk Silk, Fevicol and Sona Chandi Chawanprash implemented the concept of communication, clear message with an effective marketing medium in an appreciative manner. Even if the purchase of the brand like McCain Foods was not remarkable, the audience showed a positive response towards the understanding of the ad message. Contrasting to it, brands like; Appy Fizz, Godrej Expert, Sunfeast Dark Fantasy, Servo, Thums Up, Dabur Hajmola, Gems Surprise packs, Rupa Frontline and Anchor, failed in correctly and accurately integrating the aspects of ad message, communication and execution.

As a result, with this study it has been inferred that out of 21 brands, only Mango Frooti, Amul, Maaza, Surf Excel and Cadbury Dairy Milk Silk were extremely successful in

reaching the target audience and in creating a positive viewers' attitude towards the brands. The campaigns of few brands were designed for the urban society. These include Pepsi, Cadbury Dairy Milk Silk and Fevicol. But this study reveals that the rural society of Sivasagar district, Assam were more interested in those campaigns. This signifies that the market is constantly in a move to change and whether it be the urban or rural customers', the society wants new, innovative and variety in their taste.

As a concluding remark, it has been apparently visible that in the Impact index pyramid, only 5 brands could climb to the top. Remaining brands could only climb till the moderate level of the ladder. The explanation to this shortfall is due to imbalances of the factors like appeals, simplicity, clarity of the message, and improper execution of the advertisements. An attractive, entertaining and informative advertisement is possible only when there exist a perfect blend of all these factors. Hence there exists further scope for improvement in the design of the campaigns by the advertising agencies in order to grab the viewers' long term memory.

FUTURE SCOPE OF STUDY

As India is lagging in various studies in the area of advertising, this study opens up pathways for undertaking bidirectional studies in the field of advertisement of FMCG products in different parts of the country. As FMCG is a fast changing and a very demanding market, the advertisers' will get new scope and designs to be incorporated in their advertisements as well as other promotional drives in order to be rooted in the market for a long run.

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A STUDY ON THE VOLATILITY EFFECTS OF LISTING OF EQUITY OPTIONS AND EQUITY FUTURES IN NATIONAL STOCK EXCHANGE OF INDIA

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Abstract

Ever since its introduction in various stock exchanges of the world financial derivatives have been an interesting area of study, a major concern being its impact on the volatility of the underlying securities. Considering the phenomenal growth of the derivatives market in India together with the fact that studies around the world lack in consensus regarding the impact of futures and options on market volatility, an in-depth study of the Indian market is necessary. This study aims to find out whether introduction of options and futures contracts have an effect on the volatility of the underlying equities. The results from the ARMA- GARCH models applied in the study proves that volatility of most the underlying stocks has decreased with the listing of equity options and futures

Keywords: Volatility, ARMA, GARCH, equity options and futures, NSE

JEL Classification: G14

Introduction

The National Stock Exchange of India Limited (NSE) introduced derivative trading with S&P CNX Nifty Index Futures on June 12, 2000. Trading in Index Options was started on June 4, 2001 and Options on individual securities was introduced on July 2, 2001. Futures on individual securities were launched on November 9, 2001. Volatility is the relative rate at which the price of a security moves up and down. There are conflicting views, both theoretical as well as empirical, on the impact of listing of Options on the underlying securities. Since it can be synthetically replicated through a combination of already available assets, an Option was assumed to be redundant by Black and Scholes (1973). Therefore

introduction of an Option ought not to have any impact on the underlying stocks. However, according to Grossman (1988) the price of a traded Option conveys information which is otherwise not available from a synthetically replicated one. Thus, it would be wrong to assume that Option listing would have no impact on the underlying.

Some are apprehensive about how listing of Options might affect stock prices. Nathan Associates (1969) contended that attractiveness of the Options market can lure away significant trading volume from the spot market. This will lead to decreased liquidity and as a result increased volatility in the spot market prices. Some suggest that the noise created by uninformed new traders may lead to increase in volatility.

There are again numerous theoretical arguments stating that listing of Options tend to lower the volatility of the underlying stock. According to Skinner (1989) the stock exchanges do not select the stocks randomly but firms with high level investor interest are chosen for option listing. Very often rising variance of a stock is taken as a criterion for selecting stocks for options listing. In such a case if the variance is mean reverting, soon after introduction of an option it would revert to its mean. Thus with option introduction, lowering of volatility may be documented. Fedenia and Grammatikos (1992) notes that bid ask spread declines are observed subsequent to options listing. Consequently, this would definitely lead to increase in trading volume thereby resulting in decline of stock volatility. Options, by expanding the opportunity sets facing investors, may improve the efficiency of the market. As discussed by Black (1975) high leverage provided by stock options attracts informed traders thereby increasing liquidity in the spot market.

One of the prime reasons why futures are attributed to rise in volatility is because of the uninformed traders. The high degree of leverage combined with low transaction cost in the futures market vis-à-vis the spot market paves way for entry of additional traders who are not necessarily well informed. According to Cox (1976) the errant trading pattern of these uninformed traders in both the spot and derivative market lowers the information content of the prices, thus increasing the volatility of the underlying market. Another school of thought contends that opportunity sets made available by futures attract informed traders whose speculative activities tend to stabilize the market whereas the uninformed traders will be wiped out from the market within a short span of time.

Aside from the different theoretical arguments there is no dearth of empirical literature with regard to effect of derivatives introduction on the volatility of the underlying securities. Most of the studies conducted in developed market like U.S. and Europe find evidence of stabilising effect on the cash market returns with derivatives listing (Edwards

1988; Conrad, 1989; Robinson, 1993; Antoniou, Koutmos and Pericli ,2004; Alaxakis, 2007; Christina, 2009). However, some studies have reported increase in market volatility (Harris, 1989; Zhong, Darrat and Otero, 2004). Again, few have not found any significant effect of derivative listing (Spyrou, 2005). Inconsistency prevails even in the findings from the Asian markets.

Objective of the study

With regard to the dichotomy in theoretical stabilising/ destabilising role of derivatives and the inconsistency in empirical findings together with the increasing business growth of derivatives in the Indian market it is necessary to examine the effects of derivative introduction in the Indian context. Therefore, present study intends to examine whether listing of Equity Options and Equity Futures affects the volatility of the underlying equities listed in National Stock Exchange of India

Data and Methodology

The securities on which equity options and futures were listed from the very beginning i.e. July 2001 till December 2011 are identified. However, to analyse the effect of derivative listing it is considered necessary to have at least 2 years closing prices data prior to the date on which derivatives were listed on these securities. Securities with lesser data before the listing of options and futures contracts on these securities are dropped from the study. Equity options and futures listings only till December 2011 has been considered so as to have enough post event time series data to draw reliable conclusions. Securities have to meet some eligibility criteria prescribed by SEBI to be continued in the Derivative Segment. From time to time securities that fail to meet these criteria are suspended from Options and Futures Segment. The securities that were excluded from the derivative segment at any point of time till December 2014 are not taken into account for analysis i.e., only those securities on which options and futures contracts were continuously available once these were introduced in NSE are considered in the study. Daily closing prices of each security from January 1, 1998 to December 31, 2014 are retrieved. If a stock was not listed in NSE in January 1998, data for that stock would commence from the date in which the security was first listed in NSE. So, data for each underlying security would commence from its date of listing in NSE or January 1, 1998 whichever is later. The historical share prices are adjusted for corporate actions like stock splits, bonus issue and rights issue.

Thereafter, daily returns of each of the securities are computed. Log returns (Y_t) of the series for each security is calculated as

$$Y_t = \log P_t - \log P_{t-1} \quad (1)$$

where P_t and P_{t-1} are the closing prices of the security for successive periods $t-1$ and t . Augmented Dickey Fuller (ADF) test for presence of unit root is conducted upto lag 12.

One of the most common ways to estimate return volatility is to calculate the sample standard deviation or variance of returns over a given time period. However, it was recognised that asset return volatility is time varying in nature and is not constant over time. Another unique feature of financial time series is that periods of wide swings in prices and periods of relative calm are clustered in time. In the words of Mandelbrot (1963) ‘large changes tend to be followed by large changes, of either sign, and small changes tend to be followed by small changes’. Autoregressive Conditional Heteroscedasticity (ARCH)/ Generalised Autoregressive Conditional Heteroscedasticity (GARCH) models take care of these unique characteristics of financial returns. GARCH specification asserts that the best predictor of variance in the next period is a weighted average of the long run average variance, the variance predicted for this period and the new information in this period that is captured by the most recent squared residual (Engle, 2001). The GARCH (p,q) model given by Bollerslev (1985) suggests that the conditional variance of returns is a linear function of lagged conditional variance and past squared error terms and can be expressed as

$$Y_t = X + \varepsilon_t \quad \varepsilon_t | \psi_{t-1} \sim N(0, h_t)$$

$$Y_t = X + \varepsilon_t \quad \text{where } \varepsilon_t | \psi_{t-1} \sim N(0, h_t) \quad (2)$$

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \sum_{i=1}^p \beta_i h_{t-i}$$

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \sum_{i=1}^p \beta_i h_{t-i} \quad (3)$$

Where $p \leq 0, q > 0, \alpha_0 > 0, \alpha_j \geq 0, \beta_i \geq 0, p \geq 0, q > 0, \alpha_0 > 0, \alpha_j \geq 0, \beta_i \geq 0$

$$i = 1, 2, \dots, p$$

$$j = 1, 2, \dots, q$$

Equation (2) is the conditional mean equation and equation (3) is the conditional variance equation. Y_t is the dependent variable and X is a set of independent variable, ψ_{t-1} is the information set available at time $t-1$, ε_t is the error term which by definition is serially uncorrelated with zero mean and variance h_t . The GARCH model starts with the specification of the conditional mean equation (2) that is expressed as

t, ε_t

$$R_t = c + \varepsilon_t \text{ where } \varepsilon_t | \psi_{t-1} \sim N(0, h_t) \quad (4)$$

R_t refers to the return calculated as the log returns of the closing price of the underlying securities at time t , ε_t the error term is assumed to be independently and identically distributed with zero mean, ψ_{t-1} is the information set available at time $t-1$.

In order to take into account the market wide factors S&P CNX Nifty log returns are incorporated in the conditional mean equation.

$$R_t = c + \delta R_{nifty} + \varepsilon_t$$

$$R_t = c + \delta R_{nifty} + \varepsilon_t \quad (5)$$

Further, appropriate autoregressive (AR) terms and moving average (MA) terms are added to the regression model to take care of any serial correlation in the residuals and the equation takes the form

$$R_t = \theta + \delta Nifty_t + \sum_{m=1}^k R_{t-m} + \varepsilon_t + \sum_{n=1}^l \gamma_n \varepsilon_{t-n}$$

$$R_t = \theta + \delta Nifty_t + \sum_{m=1}^k R_{t-m} + \varepsilon_t + \sum_{n=1}^l \gamma_n \varepsilon_{t-n} \quad (6)$$

The residuals from the ARMA(m,n) model are verified for serial autocorrelation to confirm the goodness of fit of the model. Breusch Godfrey Lagrange Multiplier test is used to test the significance of residual serial correlation. Equation (6) can be used to find the effects of derivatives introduction if there is no evidence of autoregressive conditional heteroskedasticity (ARCH) in the residuals. Therefore, ARCH Lagrange Multiplier test is conducted to look for autoregressive conditional heteroscedasticity in the residuals. Also, for robustness Ljung Box test on the squared residuals is applied to look into the ARCH effects. Significance of the LM test and Ljung Box test on the squared residuals imply the necessity of use of ARCH/GARCH models. The GARCH (1,1) specification can be used to describe the volatility dynamics of almost any financial return series, both in developed as well as emerging markets (Engle, 2003) and the same has been used to describe the volatility dynamics of the underlying securities in the study. The conditional variance in GARCH(1, 1) process is given by

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1}$$

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1} \quad (7)$$

Where $\alpha_0 > 0, \alpha_1 \geq 0, \beta_1 \geq 0, \alpha_0 > 0, \alpha_1 \geq 0, \beta_1 \geq 0$

h_t is the conditional variance in period t , α_1 represents the short run persistence of shock and β_1 represents the contribution of older shocks on return variance. If GARCH(1,1) is found to be a poor fit as per the goodness of fit tests, higher order GARCH model or ARCH(q) (Engle,1982) is applied. The conditional variance in ARCH(q) process is given by

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2$$

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 \quad (8)$$

To determine whether the conditional volatility of the stock returns has been affected by the introduction of options and futures a dummy variable, D is introduced in the conditional variance equation. The dummy takes the value of 0 (zero) prior to listing of derivative contracts and 1(one) after these derivative contracts are introduced. The conditional variance equation is thus specified as

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \sum_{i=1}^p \beta_i h_{t-i} + \lambda D$$

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \sum_{i=1}^p \beta_i h_{t-i} + \lambda D \quad (9)$$

Or

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \lambda D$$

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \lambda D \quad (10)$$

depending on whether GARCH(p,q) or ARCH(q) model is used.

If the coefficient of the dummy variable λ is found to be significant, it can be concluded that initiating derivative trading in the market has had an impact on the volatility of the underlying securities. If λ is found to be negative and significant it can be said that volatility has decreased post derivative introduction and if λ is found to be positive and significant it can be concluded that volatility has increased with the introduction of equity options and futures.

When equity derivatives were introduced for the first time in NSE in 2001, equity options were listed on July 2, 2001 and equity futures on the same securities were listed November 9, 2001. For these stocks, to separate the effects of options and futures 2 dummy variables are specified, one to account for the effects of equity options listing and the other to account for the effects of equity futures introduction. Thus Equation (9) and (10) takes the following forms respectively if the stocks had derivatives listed on them in 2001.

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \sum_{i=1}^p \beta_i h_{t-i} + \lambda_0 DO_t + \lambda_1 DF_t$$

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \sum_{i=1}^p \beta_i h_{t-i} + \lambda_0 DO_t + \lambda_1 DF_t \quad (11)$$

Or

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \lambda_0 DO_t + \lambda_1 DF_t$$

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \lambda_0 DO_t + \lambda_1 DF_t \quad (12)$$

The dummy variables DO_t and DF_t take the value of 0 (zero) prior to listing of equity options and equity futures respectively and 1(one) after their introduction.

Some diagnostics tests are conducted to verify if the model specified is good fit for the return series. The squared residuals of the estimated models should not be serially correlated and there should not remain any ARCH effects in the residuals. For this Ljung Box test is conducted on the squared residual series and ARCH Langrange Multiplier test is also applied.

Findings

On the basis of the criteria prescribed above 83 stocks are identified for analysis. Daily closing prices of each security from January 1, 1998 to December 31, 2014 are retrieved and adjusted for corporate actions. Returns of the securities are computed through log transformation. Descriptive statistics i.e. mean, standard deviation, skewness and kurtosis of the 83 log return series are reported in Table 1. The return series depict fat tails as evident from the kurtosis exceeding 3 in all the cases. This is in confirmation to the widely documented findings of Mandelfort (1963) and Fama (1965) that financial returns follow a leptokurtic distribution that is characterised by fat tails and a narrow peak around the mean when compared with normal distribution. Shapiro Francia test for normality is conducted. The hypothesis that the return series is normally distributed is rejected at 1% significance level in all the 83 cases analysed. The test statistic W' is reported in Table 1. Augmented Dickey Fuller (ADF) test is conducted upto lag 12 to test for stationarity. The ADF test statistics for the 83 securities are reported at the chosen lag based on Akaike Information Criteria (AIC). The test statistics along with the lag in parenthesis are reported in Table 1. The null hypothesis of presence of unit root is rejected at 1% significance level in each of the return series of the 83 securities.

Regression models with autoregressive (AR) terms and moving average (MA) terms where necessary are specified for the mean equation of the 83 return series. To verify the

goodness of fit of the models Breusch Godfrey LM test is applied to test for serial correlation in the residuals. The presence of ARCH effect is detected in all the 83 series through Ljung Box test and ARCH LM test. This necessitates the use of ARCH/GARCH type models to capture the volatility dynamics. For most of the return series' GARCH(1,1) specification i.e.,

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1} + \lambda D_t$$

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1} + \lambda D_t \quad (13)$$

was found to be a good fit. In GARCH(1,1) it is important to ensure that $\alpha_0 > 0, \alpha_1 \geq 0, \beta_1 \geq 0$ $\alpha_0 > 0, \alpha_1 \geq 0, \beta_1 \geq 0$. Also, the model is covariance stationary only if $\alpha_1 + \beta_1 < 1$ $\alpha_1 + \beta_1 < 1$. If the model is able to capture the time varying volatility there should not be serial correlation in squared residuals of the model. Ljung Box test is conducted to test for serial correlation in the squared residuals and ARCH LM test is conducted to ensure that there is no presence of ARCH effects in the squared residuals. If GARCH(1,1) is found to be inadequate GARCH(1,2) i.e.,

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1} + \beta_2 h_{t-2} + \lambda D_t$$

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1} + \beta_2 h_{t-2} + \lambda D_t \quad (14)$$

is used to model the return series'. In case of the security SUNPHARMA, GARCH(1,3) was applied

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1} + \beta_2 h_{t-2} + \beta_3 h_{t-3} + \lambda D_t$$

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1} + \beta_2 h_{t-2} + \beta_3 h_{t-3} + \lambda D_t \quad (15)$$

For AXISBANK return series, ARCH(9) model is used that is expressed as

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \alpha_2 \varepsilon_{t-2}^2 + \alpha_3 \varepsilon_{t-3}^2 + \alpha_4 \varepsilon_{t-4}^2 + \alpha_5 \varepsilon_{t-5}^2 + \alpha_6 \varepsilon_{t-6}^2 + \alpha_7 \varepsilon_{t-7}^2 + \alpha_8 \varepsilon_{t-8}^2 + \alpha_9 \varepsilon_{t-9}^2 + \lambda D_t$$

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \alpha_2 \varepsilon_{t-2}^2 + \alpha_3 \varepsilon_{t-3}^2 + \alpha_4 \varepsilon_{t-4}^2 + \alpha_5 \varepsilon_{t-5}^2 + \alpha_6 \varepsilon_{t-6}^2 + \alpha_7 \varepsilon_{t-7}^2 + \alpha_8 \varepsilon_{t-8}^2 + \alpha_9 \varepsilon_{t-9}^2 + \lambda D_t \quad (16)$$

For KOTAKBANK return series, ARCH(5) model is used

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \alpha_2 \varepsilon_{t-2}^2 + \alpha_3 \varepsilon_{t-3}^2 + \alpha_4 \varepsilon_{t-4}^2 + \alpha_5 \varepsilon_{t-5}^2 + \lambda D_t$$

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \alpha_2 \varepsilon_{t-2}^2 + \alpha_3 \varepsilon_{t-3}^2 + \alpha_4 \varepsilon_{t-4}^2 + \alpha_5 \varepsilon_{t-5}^2 + \lambda D_t \quad (17)$$

If the volatility of a return series could be explained by both a higher order GARCH model like GARCH(1,2) and ARCH(q) model, Akaike Information Criteria is used to make the model selection.

For the sake of brevity the coefficients of ARMA equations, the ACFs and PACFs, the coefficients of the mean equation, the results of the diagnostics tests of the 83 series are

not shown in this paper. Only the coefficients of the GARCH conditional variance equation along with the dummy variables of all the 83 securities are reported in Table 2. The coefficients of ARCH(q) variance equation are reported in Table 3. Since for the year 2001 equity options introduction and equity futures on the same securities are introduced in different dates 2 dummy variables are introduced, one to account for the effects of equity options and the other to account for the effects of equity futures introduction. The results are mixed for these securities with the coefficients of the dummy variables not being statically significant in most of the cases. In 13 out of 18 securities the coefficient of the dummy variable for option introduction in 2001 was found to be insignificant which implies that options introduction did not have significant effect on the volatility of the underlyings. The coefficient of dummy variable for futures introduction is found to be significant and negative for 7 securities which reveals that equity futures has led to significant decrease in the volatility of the underlying securities. For derivative listings other than 2001, i.e. in 65 out of the 83 securities only 1 dummy variable is specified to account for the effects of both options and futures listings. In these securities, the dummy variable is significant in 52 cases. There are 8 securities in which introduction of equity options and futures has led to significant increase in volatility of the underlying stocks and 44 securities where evidence of significant decrease in volatility is found with the introduction of equity futures and options.

Conclusion

The importance of the study stems from rapid growth of derivatives over the world which poses some major challenges to regulators and policy makers. One of these is the increase in market volatility. For framing rules related to the derivatives market and to curb its negative effects, the knowledge about its impact on the underlying market is of utmost necessity. At NSE the turnover from the derivative segment has long surpassed the equity market turnover. Further, NSE is ranked among the top derivative exchanges in the world when it comes to stock futures and index options. ARMA-GARCH(p,q) model is used to determine whether listing of equity options and futures have led to increase in volatility of the underlying securities in the NSE. A number of goodness of fit tests is conducted to ensure adequacy of the models used. High persistence was noted in all the securities as evident from the sum of α_i and β_i being very close to 1. This is a very common phenomenon observed in daily return series. Though there are few securities that displayed increase in volatility with the introduction of equity options and futures most of the securities experienced a decrease in

volatility with listing of stock options and futures which goes to prove that derivatives have contributed to the market stability in the Indian context.

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Table 1
Table showing the summary statistics, test statistics for Shapiro Francia test for normality and Augmented Dickey Fuller test of the log returns of securities identified for GARCH analysis

Sl No	Securities	Mean	Std Deviation	Skewness	Kurtosis	W* #	ADF ^
1	ACC	5.43E-04	0.0254388	-0.1483053	6.478152	0.95544*	-46.62724 * (1)
2	ADANIENT	0.0009907	0.0323588	0.131313	9.186175	0.91433*	-17.7549 * (9)
3	ADANIPTS	0.000287	0.0297675	0.2717088	7.349278	0.95484*	-16.64966 * (6)
4	ALBK	0.0008526	0.0279302	-0.0007085	6.980137	0.96033*	-24.7181 * (4)
5	AMBUJACEM	5.92E-04	0.024469	0.0738352	5.506435	0.96784*	-48.40553 * (1)
6	ANDHRABAN K	6.90E-04	0.0270938	-0.0134564	7.541756	0.95191*	-40.50993 * (1)
7	APOLLOTYRE	7.82E-04	0.0318922	0.2894359	7.575889	0.95146*	-28.39076 * (4)
8	ASHOKLEY	0.0007618	0.0315307	0.1974565	5.817647	0.96789*	-45.3857 * (1)
9	ASIANPAINT	9.61E-04	0.0183796	0.2343687	7.690233	0.93617*	-29.15156 * (4)
10	AUROPHARM A	1.43E-03	0.0318084	-0.0446681	7.15257	0.94646*	-16.41509 * (12)
11	AXISBANK	1.24E-03	0.0307036	0.4621311	8.041253	0.94463*	-18.40762 * (10)
12	BANKBAROD A	5.36E-04	0.0294819	0.0533376	7.176979	0.9594*	-19.51627 * (1)
13	BANKINDIA	0.0004735	0.0313464	0.1380414	5.871801	0.96863*	-19.39783 * (11)
14	BHARATFORG	1.01E-03	0.0295388	0.2167327	6.077239	0.95792*	-28.3787 * (4)
15	BHARTIARTL	0.0008616	0.0252629	0.4425015	7.466232	0.9611*	-35.43867 * (2)
16	BHEL	4.76E-04	0.0283104	-0.1270946	7.038013	0.95883*	-24.71407 * (6)
17	BIOCON	0.000211	0.0235703	0.4427802	11.17838	0.9167*	-15.074 * (10)
18	BPCL	4.30E-04	0.028474	0.0669742	6.207046	0.9652*	-29.5445 * (4)
19	CENTURYTEX	4.69E-04	0.035316	0.0348648	5.452319	0.97392*	-27.17144 * (4)
20	CESC	7.08E-04	0.031829	0.5099587	6.693159	0.95346*	-28.6515 * (4)
21	CIPLA	8.51E-04	0.0224828	-0.0229682	6.928636	0.9445*	-28.54677 * (5)
22	CROMPGREA V	1.01E-03	0.0341925	0.2075035	5.432562	0.97031*	-46.96157 * (1)
23	DABUR	0.0009834	0.0242572	0.1454597	7.556535	0.93952*	-19.21852 * (11)

24	DIVISLAB	1.56E-03	0.0251328	0.3398943	7.17393	0.94091*	-23.5862 * (4)
25	DRREDDY	8.69E-04	0.0239718	-0.0400264	8.013233	0.93223*	-47.34301 * (1)
26	EXIDEIND	0.0008076	0.0267141	0.4294446	6.595566	0.95506*	-33.53292 * (3)
27	FEDERAKBNK	9.30E-04	0.0294076	0.1494652	7.757657	0.94561*	-18.51998 * (9)
28	GAIL	4.24E-04	0.0248169	0.0082434	13.25955	0.92361*	-19.92999 * (11)
29	GODREJIND	1.61E-03	0.0332568	0.7612344	7.853756	0.93581*	-27.56249 * (2)
30	HCLTECH	0.0003782	0.0331094	-0.3679397	7.941329	0.93378*	-25.17898 * (6)
31	HDFC	8.43E-04	0.0241711	0.3433467	7.365769	0.95163*	-29.43677 * (6)
32	HDFCBANK	9.60E-04	0.0235514	0.2809256	9.963675	0.93307*	-28.83451 * (5)
33	HEROMOTO CO	8.25E-04	0.0240461	0.3984485	8.165126	0.95466*	-41.43276 * (2)
34	HEXAWARE	0.0010257	0.034078	1.356882	22.66331	0.89856*	-20.89567 * (6)
35	HINDLACO	1.74E-04	0.0273525	-0.0813561	6.331147	0.9645*	-20.17022 * (10)
36	HINDPETRO	2.72E-05	0.0290481	-0.536523	15.20612	0.93343*	-30.0924 * (4)
37	HINDUNILVR	3.98E-04	0.0201831	0.2625263	7.393854	0.95465*	-27.13088 * (6)
38	ICICIBANK	8.74E-04	0.0304762	0.0752165	6.843908	0.95236*	-28.44944 * (5)
39	IDBI	-5.77E-05	0.0325734	-0.4201494	15.73303	0.91795*	-18.86056 * (10)
40	IFCI	3.05E-05	0.0401226	0.4682081	8.663608	0.91662*	-28.8385 * (4)
41	IGL	0.0004864	0.0250344	-1.062684	38.95882	0.84793*	-22.92252 * (6)
42	INDIACEM	4.15E-05	0.0342994	0.1200515	5.591213	0.96698*	-47.39128 * (1)
43	INFY	1.09E-03	0.0271304	-0.5138671	12.04821	0.91371*	-18.99897 * (10)
44	IOB	5.24E-04	0.0283431	-0.0844322	7.340714	0.95656*	-41.11533 * (1)
45	IOC	0.0002511	0.0246203	0.1748796	9.053695	0.93318*	-26.99961 * (5)
46	ITC	6.76E-04	0.0211629	0.0429253	6.177258	0.95515*	-47.87572 * (1)
47	JINDALSTEL	1.07E-03	0.0331726	0.0457009	8.580846	0.94442*	-19.45649 * (10)
48	JISLJALEQS	0.001052	0.0327954	0.2507462	5.500344	0.97029*	-17.51805 * (10)
49	JPASSOCIAT	0.0001954	0.0385171	-0.4617788	7.89144	0.95769*	-36.35262 * (1)
50	KOTAKBANK	0.0017926	0.0337976	0.4391488	8.215656	0.9308*	-26.09486 * (5)

51	LICHSGFIN	0.0006191	0.0302902	0.3277652	7.783105	0.94663*	-19.92374 * (11)
52	LT	9.70E-04	0.0290913	0.2698089	9.263235	0.93444*	-36.36367 * (1)
53	KTKBANK	0.0010096	0.0241453	0.3628434	7.153691	0.96659*	-18.19745 * (10)
54	LUPIN	0.0016206	0.0243952	1.070733	17.68835	0.9187*	-24.71256 * (5)
55	M&M	6.42E-04	0.027847	0.0352429	7.03962	0.9592*	-30.5558* (4)
56	MCLEODRUSS	6.59E-04	0.0318695	0.5554848	7.674439	0.94252*	-16.93945 * (6)
57	NMDC	-0.0005503	0.0287171	0.864549	8.720832	0.92408*	-13.634 * (7)
58	ONGC	4.65E-04	0.02477	0.1764147	7.300832	0.95276*	-19.63441 * (10)
59	ORIENTBANK	3.91E-04	0.0289262	-0.0948529	8.168113	0.9592*	-21.10394 * (8)
60	PETRONET	9.90E-04	0.026842	0.2557603	12.23799	0.91064*	-30.91008 * (2)
61	PTC	0.0002792	0.0293451	0.323629	7.743454	0.94602*	-26.64312 * (3)
62	RANBAXY	4.10E-04	0.0268987	-0.5936753	17.40483	0.90526*	-28.3445 * (4)
63	RELCAPITAL	4.84E-04	0.0349806	-0.0213546	6.597965	0.95976*	-35.32749 * (2)
64	SAIL	4.73E-04	0.0362707	0.5644355	10.28952	0.91653*	-19.12743 * (9)
65	SBIN	5.98E-04	0.0247464	0.0373243	5.961666	0.96991*	-20.75354 * (8)
66	SESAGOA	8.11E-04	0.034053	0.2706992	5.600856	0.96965*	-19.72071 * (8)
67	SIEMENS	8.91E-04	0.0271476	0.1021432	6.676592	0.94957*	-19.306 * (10)
68	SRTRANSFIN	1.17E-03	0.0536072	0.1508094	23.16648	0.73236*	-18.52761 * (12)
69	SUNPHARMA	1.42E-03	0.0255718	0.2132943	6.919168	0.93971*	-20.42539 * (11)
70	SYNDIBANK	6.24E-04	0.0282166	0.0882661	8.936731	0.9383*	-29.40385 * (3)
71	TATACHEM	2.52E-04	0.0258258	-0.0529255	7.099856	0.94607*	-18.92954 * (11)
72	TATAGLOBAL	2.97E-04	0.0240531	0.1901283	6.01054	0.96022*	-46.82435 * (1)
73	TATAMOTORS	4.97E-04	0.0296876	-0.1018663	5.479503	0.97466*	-19.03519 * (9)
74	TATAPOWER	4.73E-04	0.0266794	-0.0711865	8.946318	0.93988*	-20.18507 * (10)
75	TATASTEEL	3.50E-04	0.0289591	-0.1772374	5.73894	0.96995*	-19.63218 * (8)
76	TITAN	1.11E-03	0.032525	0.4102418	6.449112	0.95647*	-46.68972 * (1)
77	UCOBANK	5.22E-04	0.0293351	0.3870059	7.163309	0.9468*	-23.7651 * (4)

78	ULTRACEMCO	0.0009047	0.0222479	0.2795477	5.950641	0.96159*	-21.78188 * (4)
79	UPL	8.91E-04	0.0390378	-1.062697	28.73705	0.92197*	-19.14335 * (7)
80	UNITECH	0.0006735	0.0272311	0.3358285	9.025015	0.94943*	-19.74605 * (8)
81	VOLTAS	1.04E-03	0.0326125	0.4301571	5.704821	0.96521*	-19.09117 * (9)
82	WIPRO	9.62E-04	0.0310206	-0.0991058	8.212276	0.92839*	-16.30069 * (10)
83	YESBANK	0.0011359	0.0329669	-3.554226	88.30104	0.82515*	-27.46427 * (3)

Shapiro Francia test statistic for normality

^ Augmented Dickey Fuller test statistic for unit root at lag 12

*Statistically significance at 1% level

Figures in parenthesis under the ADF column indicates the lag chosen on the basis of AIC at which the ADF test statistic is reported.

Table 2: The coefficients of GARCH(p,q) variance equation and the dummy variables.

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \sum_{i=1}^p \beta_i h_{t-i} + \lambda D \quad / \quad h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \sum_{i=1}^p \beta_i h_{t-i} + \lambda_0 DO_t + \lambda_1 DF_t$$

Sl No.	α_0	α_1	β_1	β_2	β_3	λ	λ_0	λ_1
1	5.83E-05*	0.104385*	0.857596*				-2.62E-05**	-1.40E-05^
2	0.000142*	0.238691*	0.62441*			2.71E-05*		
3	0.000206*	0.101114*	0.759296*			-0.00012*		
4	6.75E-05*	0.127383*	7.90E-01*			-1.82E-05*		
5	2.91E-05*	0.058988*	0.903614*				-1.48E-05*	-3.01E-07^
6	6.19E-05*	0.147723*	0.76396*			-7.50E-06**		
7	1.66E-05*	0.051195*	0.930698*			3.64E-06*		
8	2.05E-05*	0.061955*	0.468545*	0.451138*		-8.94E-06*		
9	2.69E-05*	0.141986*	0.409822*	0.362353*		2.31E-06^		
10	3.05E-05*	0.11502*	0.859658*			-4.36E-07^		
12	3.78E-05*	0.091768*	0.471087*	0.392833*		-1.28E-05*		
13	6.65E-05*	0.124232*	0.78743*			1.69E-06^		
14	9.50E-06	0.070045 *	0.572412 *	0.346715 *		-2.17E-06 *		
15	0.000111*	0.126281*	0.761943*			-5.15E-05*		
16	2.34E-05*	0.073067*	0.910072*				7.15E-06^	-2.31E-05
17	9.37E-06*	0.047652*	0.920567*			6.73E-06*		
18	2.39E-05*	0.055099*	0.926482*				-3.06E-06^	-8.04E-06^
19	3.21E-05*	0.070116*	0.905372*			-1.65E-05*		
20	0.000146*	0.103553*	0.78252*			-8.10E-05*		
21	7.40E-05*	0.09183*	0.799563*				2.33E-06^	-4.08E-05*
22	0.000119*	0.13979*	0.229793*	0.518881*		-3.16E-05*		
23	3.87E-05*	0.123499*	0.205953*	0.608046*		-1.40E-05*		
24	7.83E-07*	0.030605*	0.030910*	0.934029*		1.07E-06^		
25	9.30E-06*	0.032763*	0.956867*				2.89E-06^	-8.19E-06**
26	9.37E-05*	0.137006*	0.747355*			-3.62E-05*		
27	9.41E-05*	0.136174*	0.784257*			-4.41E-05*		
28	2.54E-05*	0.120108*	0.844589*			-4.28E-06**		
29	0.000145*	0.116174*	0.777741*			-8.34E-05*		
30	4.03E-05*	0.082367*	0.897857*			-2.91E-05*		
31	2.03E-05*	0.086315*	0.88121*				-5.78E-06^	-2.02E-06^
32	2.71E-05*	0.120785*	0.392288*	0.440113*		-1.22E-05*		
33	8.09E-05*	0.124993*	0.508663*	0.248685*		-3.27E-05*		
34	8.27E-05*	0.061327*	0.883949*			-4.37E-05*		

35	1.99E-05*	0.067047*	0.90991*				-5.45E-06^	-2.82E-06^
36	4.34E-05*	0.072323*	0.897928*				-1.44E-05^	-7.74E-06^
37	5.15E-05*	0.14172*	0.440869*	0.288279*			-3.26E-06^	-1.01E-05^
38	4.09E-05*	0.106079*	0.85435*			-2.24E-05*		
39	0.000177*	0.119594*	0.730802*			-8.98E-05*		
40	9.39E-05*	0.118599*	0.818930*			-8.21E-06**		
41	0.000125*	0.318086*	0.525149*			-2.87E-05*		
42	3.04E-05*	0.074094*	0.897347*			-6.40E-06*		
43	6.29E-05*	0.141608*	0.796967*				1.68E-06^	-3.28E-05^
44	3.95E-05*	0.097954*	0.840789*			1.52E-06^		
45	3.34E-05*	0.194989*	0.407457*	0.361855*		-6.01E-06**		
46	2.34E-05*	0.063983*	0.884105*				1.46E-05**	-2.38E-05*
47	1.63E-05*	0.084704*	0.904571*			-6.70E-06*		
48	7.71E-05*	0.120225*	0.818493*			-1.98E-05*		
49	1.49E-05*	0.071443*	0.917959*			-1.62E-06^		
51	2.99E-05*	0.100656*	0.855509*			5.06E-08*		
52	1.57E-05*	0.103705*	0.867309*			9.73E-07^		
53	0.000139*	0.140161*	0.739566*			-3.82E-05^		
54	2.46E-05*	0.11015*	0.864095*			-1.16E-05*		
55	2.84E-05*	0.065482*	0.906538*				1.32E-06*	-1.88E-05*
56	5.75E-05*	0.075911*	0.876*			-3.27E-05*		
57	2.80E-05*	0.126687*	0.846103*			-8.62E-06*		
58	3.00E-05*	0.134543*	0.417575*	0.420058*		-1.40E-05*		
59	2.07E-05*	0.115839*	0.845527*			1.22E-05*		
60	7.08E-05*	0.121932*	0.775558*			-1.65E-05*		
61	0.000123*	0.174535*	0.662924*			-5.62E-06^		
62	1.55E-05*	0.091748*	0.891518*				3.80E-06^	-7.60E-06^
63	1.17E-05*	0.073571*	0.909448*			4.68E-06*		
64	3.74E-05*	0.130888*	0.169295*	0.669257*		-1.35E-05*		
65	1.18E-05*	0.068885*	0.90376*				1.19E-06^	-3.32E-06^
66	0.000103*	0.170542*	0.449431*	0.313182*		-3.80E-05*		
67	2.37E-05*	0.083658*	0.877817*			-2.10E-06^		
68	4.41E-05*	0.138067*	0.847691*			-2.36E-05*		
69	2.90E-05*	0.191226*	0.113356*	0.372354*	0.285389*	-7.99E-06*		
70	1.74E-05*	0.066934*	0.898505*			6.55E-06*		
71	1.62E-05*	0.057212*	0.916789*			-6.09E-06*		
72	2.17E-05*	0.073612*	0.894428*				1.20E-05^	-2.05E-05*
73	2.19E-05*	0.066719*	0.576253*	0.338567*			1.12E-05^	-2.50E-05^

74	1.56E-05*	0.089464*	0.891589*				2.81E-05*	-3.46E-05*
75	1.19E-05*	0.064831*	0.920968*			-5.09E-06*		
76	0.000134*	0.119863*	0.794832*			-6.98E-05*		
77	1.49E-05*	0.037311*	0.940691*			-2.22E-07^		
78	1.09E-05*	0.044755*	0.937675*			-3.55E-06*		
79	9.15E-05*	0.135085*	0.70082*			1.66E-05*		
80	6.67E-05*	0.107071*	0.838522*			3.14E-05*		
81	1.42E-05*	0.054863*	0.932648*			-1.30E-06^		
82	8.83E-05*	0.164133*	0.793596*			-5.90E-05*		
83	2.79E-05*	0.094112*	0.867976*			-8.34E-07^		

λ indicates the coefficient of the dummy variable for equity options and futures introduction

λ_0 indicates the coefficient of the dummy variable for equity options introduction

λ_1 indicates the coefficient of the dummy variable for equity futures introduction

©Sl no indicates the Serial number of the securities as in Table 1

*Statistically significant at 1% level

**Statistically significant at 5% level

^Statistically not significant

Table 3: The coefficients of ARCH(q) Variance equation and the dummy variables.

$$h_t = \alpha_0 + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2 + \lambda D$$

SI [©]	α_0	α_1	α_2	α_3	α_4	α_5	α_6	α_7	α_8	α_9	λ
11	4.15E-04*	0.216742*	0.099096*	0.053666*	0.029575**	0.047738*	0.05*	0.034031*	0.033754*	0.034789*	-1.83E-04*
50	0.00055*	0.243781*	0.130959*	0.104833*	0.162399*	0.07303*					-0.00033*

λ indicates the coefficient of the dummy variable for equity options and futures introduction

[©]SI no indicates the Serial number of the securities as in Table 1

*Statistically significant at 1% level

**Statistically significant at 5% level

PROMOTION OF COMMUNITY BASED TOURISM IN MAJULI: A SOCIO - DEMOGRAPHIC STUDY

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ABSTRACT:

Tourism is a business that requires a continuous and wide range of planning, adequate marketing strategies and a significant portion of investment in products and services offered under the industry. For the last one and half decade or so it has been observed that the Indian tourism industry has developed in a remarkable pace. With the privilege of being one of the biggest river islands of the world, proper marketing and communication network of tourism activity can bring radical changes in the field of tourism and to achieve such growth rate in the region the support and assistance of the host population is highly sought. This paper attempts to look into various aspects of community based tourism in Majuli and tries to test statistical relationship with the demographic profiles of the respondents.

Key words:

Community Based Tourism, Majuli, MCLRA (2006).

1.1. INTRODUCTION:

Tourism is a genuinely powerful and unique force for change in the community (Macleod, 2006). Resident perceptions of tourism and its associated impact have been used repeatedly to study the dynamics of transformation from the perspective of local communities (Diedrich & Gracia - Buades, 2009). Murphy & Murphy, (2006) opines that tourism activity should engage local community interest in a meaningful partnership with the tourism industry to construct a destination product that is appropriate from a business, local, societal and environmental perspective. In this aspect local community should be empowered substantially in their locality. Scheyvens, (1999) classified community empowerment in tourism development in

terms of economic, psychological, social and political, which assumes that residents gain personally from tourism activities.

Timothy, (1999) viewed that for tourism development in the right perspective local community is needed to be empowered from two perspectives-(a) public participation in decision-making and (b) resident involvement in benefits of tourism. Adequate arrangements can bring together stakeholders in the public and private sectors, as well as environmental and community groups, in order to discuss and make policy decisions about how tourism should be managed and developed (Beason & Selin, 1991; Getz & Jamal, 1995; Lew, Hall, & Williams, 2004). Murphy, (1985) argues that tourism relies on the goodwill and cooperation of local people because they are a part of its product. Article 5 of the Berlin Declaration on “Biological Diversity and Sustainable Tourism, 1997,” states that, “tourism should be a beneficial activity for host countries and communities. Local people should be associated with tourism activities and shall equitably avail the economic, social and cultural benefits they generate, particularly, in the creation of direct and indirect jobs resulting from them”.

Community induced tourism particularly include tourism activities related to Ecotourism, Agro-tourism, Rural Tourism, Village-based tourism, Ethnic or Indigenous tourism and Cultural tourism as these activities are often open to community ownership and control. Lankford & Howard (1994), identified ten variables that could influence residents’ opinion about local tourism. They are length of residency; economic dependence on tourism; distance from tourism (activity) centre from resident’s home; residents’ involvement in tourism decision-making; birth place of resident; level of knowledge; level of contact with tourists; demographic characteristics; perceived impacts on local outdoor recreation opportunities; and rate of community growth/decline influence on resident’s interest. Role of stakeholders in the tourism industry cannot be overlooked. Active participation of host community makes them more proud and aware about the resources with the development of tourism industry (Macleod, 2006).

1.2. MAJULI AND ITS TOURISM POTENTIALITY:

Majuli as biggest habituated river island of the mighty river Brahmaputra is having extensive potential to flourish as a hot spot tourist destination. In a study performed by Prasanta Bhattacharya during 1995 - 99, creating a tourist potentiality index for 59 tourist spots of the state on the basis of demand and supply component of a destination, Majuli stands at fifth most

potential tourist spot with 19.75 score after South Guwahati, Kaziranga, Haflong and Tezpur (Bhattacharya, 2004; 318-319).

The island has been able to attract 2 - 20 percent foreign visitors coming to the state (Bhattacharya, 2004; 296). In respect of domestic tourist, significant numbers of intra-state tourists flock to the island during different festive and celebration seasons in the island. The product and image that intermediaries package and deliver in tourism industry is highly dependent upon the goodwill and cooperation of host communities (Sajani and Goswami, 2002; 51). Community response to the opportunities and challenges of tourism management depends to a large extent on its attitude towards the industry. In this respect three determinants were identified (Sajani and Goswami, 2002; 251):

1. The type of contact which exists between resident and a visitor can have a bearing or impact on the resident reaction to add support to the industry;
2. The relative importance of the industry to the prosperity of individuals and community; and
3. A tolerance threshold in resident receptivity that could be controlled in terms of volume of business.

Though tourism generates substantial economic benefits for an economy, there are numerous hidden costs to tourism. Among the various reasons a large scale transfer of tourism revenues out of the host nation and exclusion of local businesses and products is a critical one. The direct income from tourists is substantially reduced in the name of imports or savings, and these subtracted amounts are called as “leakages”. Of each US\$100 spent on a vacation tour by a tourist from a developed economy, only a US\$ 5 actually stays in a developing country destination economy (Rizvi, 2008; 90). Moreover, extensive tourism activity increases infrastructure and developers cost, increase in prices, more economic dependence on tourism industry, seasonal character of jobs, result in unbalanced economic growth, degrades the natural and cultural environments, extensive commercialization of culture, religion and the arts, increase in inequality, etc.

Majuli Cultural Landscape Region Act, 2006 (MCLRA, 2006) is an outcome of one of the recommendations of the United Nations world heritage site reviewing committee. Government of Assam came with the prevention and protection mechanism in the process of promoting the unique cultural and religious features of Majuli across the world in 2006.

MCLRA, 2006 became an act by virtue of Government of Assam, Legislative branch notification number No.LGL.143/2004/19 after the assent from Governor of Assam as on 25th July, 2006 and published in the Assam Gazette Extraordinary, No.167 Dispur, Friday, 28th July, 2006, 6th Sravana, 1928 (S.E). The basic objective of the Act is to integrate development and heritage for protection of heritage resources of MAJULI CULTURAL LANDSCAPE REGION, through education, awareness, understanding of cultural significance and ensuring a sustainable and positive development trend.

The process of getting the distinct tag of UN World Heritage Site, the government at its local, state, national and international level making best effort to come out with a positive result. Though, the process is criticized at different front at different levels from time to time.

The present work is intended to seek the following objectives:

1. To determine the impact of respondent's demographic profile on their tourism based responses.
2. To determine prospects of promoting tourism and community tourism based activities in the river island Majuli.

Considering the broad objectives of the study the following hypotheses were formulated for performing necessary statistical tests.

Null Hypothesis: There is no significant association between the opinion of LHR towards different sectors in promoting tourism and tourism based activities in the island and their age, educational status and occupational status.

Null Hypothesis: There is no significant association between the opinion with respect to tourism activities and environmental steps undertaken by LHR and their location of stay, gender and occupational status.

Null Hypothesis: There is no significant association between the opinion of local household respondents regarding prospects of tourism in the river island Majuli and their gender, educational status and occupational status.

Null Hypothesis: There is no significant association between the opinion of local household respondents regarding awareness about MCLRA, 2006 and their gender, educational status, occupational status and age.

1.3. RESEARCH FRAMEWORK:

According to the Majuli Cultural Landscape Region Act, 2006 there are 31 *Satras* in the river island Majuli (The Assam Gazette Extraordinary, 2006). It had an all total of 40 *Satras* in the past (Nath, 2009) but by 2005 the number of *Satras* significantly reduced to 22 (approximately) in number (Das, 2010). The reasons for the drastic fall could be attributed to the devastating flood and erosion of the Island. In spite of considerable reduction in numbers of *Satras* in the Island, unique features and attributes of the *Satras* and of the Island is an attractive tourism resource for the visitors not only for domestic tourists and foreign visitors.

The sample for the purpose of the study has been drawn out from the villages under the influence of *Satras*. Total 15 villages had been randomly selected with the help of random table number generator, out of total 31 *Satras* listed in MCLRA, 2006. Total 450 questionnaires had been distributed among the locals within the 1 km periphery of the *Satras*, with the use of convenience and geographical sampling under non probabilistic sampling techniques. Total 414 respondent's response found accurate for the further research process with a response rate of 92 percent. To check the relevance of the hypotheses the chi-square test is taken into consideration. Tests on the data collected performed with the help of SPSS 20 trial version software.

1.4. RESULTS AND DISCUSSIONS:

1.4.1. Demographic profile of the Respondents:

The findings of the study demonstrate that, of the total sample size of 414 local household respondents, 76 percent of the respondents are male and remaining 26 percent belongs to female group. Reason for taking more male in the study lies in the type of tourism activities performed in the study area. Most of the tourism and tourism related community based activities are performed by males', whether it is mask making, boat making, tour guide or participation in various functions and programmes etc. performed in religious institutions like *Satras*. Though, exceptions are available in some cases, more particularly related to agriculture; art and handicraft, etc. based tourism activities.

Table No. 1.1.
Socio Demographic status of Local household respondents

Sl. No.	Particulars		Frequency	Percent	Total
1	Gender	Male	314	75.80	414
		Female	100	24.20	
2	Marital Status	Married	294	73.50	400
		Unmarried	106	26.50	
3	Age	Less than 18 years	15	3.60	414
		18-25 years	52	12.60	
		26-35 years	79	19.10	
		36-45 years	76	18.40	
		46-60 years	121	29.20	
		Above 60 years	71	17.10	
4	Educational Status	No formal education	03	0.70	414
		Less than 10 years of schooling	110	26.60	
		Less than 12 years of schooling	79	19.10	
		12 completed years of schooling	109	26.30	
		Graduate	99	23.90	
		Post Graduate	14	3.40	
5	Employment Status	Business	74	17.90	414
		Service	120	29.00	
		Unemployed	11	2.70	
		Student	37	8.90	
		Retired	33	8.00	
		Homemaker	38	9.20	
		Disciple	12	2.90	
		Others	89	21.50	

Source: Compiled by the author from the primary sources.

The sample size consists of 72 percent married respondents, and 82.8 percent respondents are above the age group of 26 years. Maximum numbers of respondents are having an educational qualification below the level of graduation (96.6 percent). With respect to the occupational status of the respondents 29 percent are associated with different sorts of services both in public and private sectors, 17.90 percents are involved in business activities, 21.50 percent of respondents represents the sections of farmers, senior citizens, social workers, political party members, NGO representatives, etc. Remaining 31.6 percent of respondents belong to the category of unemployed, student, homemakers, retired and disciples.

1.4.2. Impact of Tourism activities on local communities:

In order to ascertain the opinion of respondents about pattern of impact of tourism activities on local communities 17.9 percent local respondents believes that such activities have a tendency to alter cultural phenomenon of the region, especially when it is about Majuli. 54 respondents presume that tourism activities in the island significantly damaging the environmental and natural flora and fauna of the island. Apart from partially stated respondents, a 15.9 percent respondent does not consider that there is any community value degradation in the island due to tourism and tourism based activities.

Table No. 1.2.

Opinion of Local household respondents about the impact of tourism activities on communities based on different activities

Degrading Activities	Yes	No	Somewhat Yes and No	No Comments	Total
Cultural Degradation	74 (17.9)	44 (10.6)	126 (30.4)	170 (41.1)	414
Environmental and Natural Damage	54 (13)	62 (15)	125 (30.2)	173 (41.8)	414
Community Degradation	45 (10.9)	66 (15.9)	129 (31.2)	174 (42)	414
Alcoholism and other associated aspects	21 (5.1)	80 (19.3)	131 (31.6)	182 (44)	414
Damaging Attractions	21 (5.1)	74 (17.9)	139 (33.6)	180 (43.5)	414
Waste Management	74 (17.9)	44 (10.6)	142 (34.3)	154 (37.2)	414
Others (seasonal job, increase in prices, etc)	8 (1.9)	79 (19.1)	136 (32.9)	191 (46.1)	414

Note: Figures in parentheses (italics) represents percentage.

Source: Enumerated from Field Survey.

As alcoholism is an unofficially prohibited affair in the island and as such no officially permitted wine shop is operational in the island, the impact level in the said matter is significantly low in this case. Though, traditionally made liquor is readily available and in use among tribal sections of the society. With respect to the scope of damaging attractions by the visitors is very less in the island, as majority of the attractions are preserved well by the local communities and kept under strict surveillance of the religious institutions i.e. *Satras*.

Waste management is another critical dimension of impact recorded by the Local household respondents. 17.9 percent of Local household respondents presume that waste creation

by the visitors and even by the community itself is serious challenge to face by the island or by any other economy which is primarily based on tourism based activities.

1.4.3. Role of Social Groups in promoting tourism in the island:

In such backdrop the role of different social bodies cannot be undermined in the process of developing tourism industry in the region. Total 298 respondents (79.5 percent) consider that government is sole and single largest social group to take such developmental responsibility promoting development of tourism sector.

Table No. 1.3.

Role of Social Groups in tourism development

Sectors for Development	Yes	No	Total
Government	298 (79.25)	78 (20.75)	376
Local Authority	93 (24.73)	283 (75.27)	376
Domestic visitors	28 (7.45)	348 (92.55)	376
Foreign Visitors	30 (7.98)	346 (92.02)	376
Society	142 (37.77)	234 (62.23)	376
Business people	28 (7.45)	348 (92.55)	376

Note: Figures in parentheses (italics) represents percentage.

#: Ranking is on the basis of affirmative responses.

Source: Enumerated from Field Survey.

Table No. 1.4.

Chi square test: Role of Social groups in tourism development

Sl. No.	Variables	Educational status	Age	Occupational Status
1.	Government	$\chi^2 = 17.961^{**}$	$\chi^2 = 12.519$	$\chi^2 = 15.410$
2.	Local Authority	$\chi^2 = 22.491^*$	$\chi^2 = 17.741^{**}$	$\chi^2 = 22.178^{**}$
3.	Domestic visitors	$\chi^2 = 15.405$	$\chi^2 = 9.385$	$\chi^2 = 12.337$
4.	Foreign Visitors	$\chi^2 = 17.630^{**}$	$\chi^2 = 9.672$	$\chi^2 = 12.174$
5.	Society	$\chi^2 = 20.353^*$	$\chi^2 = 11.332$	$\chi^2 = 18.394$
6.	Business people	$\chi^2 = 17.511^{**}$	$\chi^2 = 9.385$	$\chi^2 = 13.573$

Source: Enumerated from field survey.

Note: CC: Contingency Coefficient.

* Significant at 05 percent level of significance.

** Significant at 10 percent level of significance.

To test the relevance of the table no. 3.8. Chi-square test has been adopted to see the relationship between the responses of the respondents and their educational, age and occupational parameters. From the test it has been observed that there is a significant relationship between the responses reported by the Local household respondents and educational status of the respondents (Table no. 1.4) except the response reported for domestic visitors. Similarly in case of Age and occupational status of the respondents' significant relationship has been notice with the responses reported for the role of local authority in tourism development in the island.

1.4.4. Types of Tourism Activities performed in the Island:

To understand the brighter side of the tourism development in the island, 72.7 percent of respondents assume that necessary efforts were taken by local communities to protect culture of the island. Moreover, efforts were also on to protect the existing wildlife and nature (67.9 percent) and protecting bio-diversity (69.8 percent) by different institutions, NGOs and sub-division administration, etc. (Table no. 1.5).

From the survey it is found that majority of Local household respondents believe that tourism activities have considerably created awareness about the island not only within the communities of the island but also across the nation and countries. Moreover such tourism activities have been generating income for the island economy (63.3 percent), creating unity among different societies (70 percent), making them to feel proud (70.3 percent) and self reliant (66.4 percent) and also giving an opportunity to interact with new people (73.9 percent) from different parts of the world resulting in extending their external knowledge (76.1 percent) about the world economy.

Table No. 1.5.

Respondents' opinion about brighter side of different types of tourism activities performed

Activities performed	Yes	No	No Comments	Total
Protect culture	301 (72.7)	15 (3.6)	98 (23.7)	414
Protect nature and wildlife	281 (67.9)	28 (6.8)	105 (25.4)	414
Supporting and protecting biodiversity	289 (69.8)	31 (7.5)	94 (22.7)	414
Creating awareness about the Island	307 (74.2)	17 (4.1)	90 (21.7)	414
Generating more Income	262 (63.3)	50 (12.1)	102 (24.6)	414
Creates unity in the community	290 (70)	19 (4.6)	105 (25.4)	414
Pride and self respect	291 (70.3)	17 (4.1)	106 (25.6)	414
Making communities self reliant	275 (66.4)	26 (6.3)	113 (27.3)	414
External knowledge	315 (76.1)	10 (2.4)	89 (21.5)	414
Scope of meeting new peoples	306 (73.9)	13 (3.1)	95 (22.9)	414

Note: Figures in parentheses (italics) represents percentage.

Source: Enumerated from Field Survey.

1.4.5. Role of Local Communities in the growth of the tourism industry:

Observation about the different environmental protection and tourism activities undertaken by the local communities in the island reveals that tourism activities in the island are primarily community based tourism activities (Table no. 1.6). The Community role is very crucial to make the different religious cum tourism based activities successful. The reason for such community involvement lies in the cultural life in Majuli which is mainly dominated by the religion.

Being the land of *Satras*, most of its beliefs, customs, functions and festivals are governed by the *Satras*, where the community takes active participation now and then. 93.67 percent of Local household respondents believe that they have a vital role to play in organizing different community festivals and functions, like *Palnaam*, *Raas Lila*, *Janmastami*, *Guru tithis*, etc. Apart from this 65.53 percent respondents opine that community also plays major role in forest and wildlife protection. Considering the impact on resources caused by the visitors, 61.84 percent respondent assumes that local community is taking care of the factor very well. Moreover, the role of community is also extended to conservation of rare herbal species (57.89 percent), protection of traditional attributes of the community (53.68 percent), and effort to preserve common property resources (48.42 percent).

Table No. 1.6.

Environmental protection and tourism activities performed by the communities

Environmental Protection and Tourism activities	Yes	No	No Comments	Total
Organizing community features (dance, festivals, functions, etc.)	355 (93.67)	18 (4.75)	07 (1.58)	380
Preventing impact on resources from outsiders	235 (61.84)	123 (32.37)	22 (5.79)	380
Conserving herbal species	220 (57.89)	130 (34.21)	30 (7.90)	380
Conserving traditional cultures	204 (53.68)	139 (36.58)	37 (9.74)	380
Wildlife and forest protection	249 (65.53)	114 (30.00)	17 (4.47)	380
Protecting Common Property Resources, public land & resources	184 (48.42)	163 (42.89)	33 (8.69)	380
Waste management	141 (37.10)	195 (51.32)	44 (11.58)	380
Others (specify)	176 (46.31)	142 (37.37)	62 (16.32)	380

Note: Figures in parentheses (italics) represents percentage.

Source: Enumerated from Field Survey.

Table No. 1.7.

Chi square test: Environmental protection and tourism activities performed by the communities

Sl. No.	Variables	Location of Residence	Occupation	Gender
1.	Organizing community features (dance, festivals, functions, etc.)	$\chi^2 = 118.547^*$	$\chi^2 = 92.318^*$	$\chi^2 = 9.933^{**}$
2.	Preventing impact on resources from outsiders	$\chi^2 = 192.985^*$	$\chi^2 = 95.680^*$	$\chi^2 = 12.553^*$
3.	Conserving herbal species	$\chi^2 = 255.390^*$	$\chi^2 = 103.549^*$	$\chi^2 = 10.228^{**}$
4.	Conserving traditional cultures	$\chi^2 = 318.226^*$	$\chi^2 = 108.556^*$	$\chi^2 = 11.171^{**}$
5.	Wildlife and forest protection	$\chi^2 = 186.926^*$	$\chi^2 = 93.191^*$	$\chi^2 = 9.227^{**}$
6.	Protecting Common Property Resources, public land & resources	$\chi^2 = 244.000^*$	$\chi^2 = 113.266^*$	$\chi^2 = 13.429^*$
7.	Waste management	$\chi^2 = 268.227^*$	$\chi^2 = 94.312^*$	$\chi^2 = 10.858^{**}$

Source: Enumerated from field survey.

Note: CC: Contingency Coefficient.

* Significant at 01 percent level of significance.

** Significant at 05 percent level of significance.

In order to test the degree of relationship between the various environmental protection and tourism activities performed by local community and location of the respondent, their occupational status and gender, it has been noticed that Null hypothesis cannot be accepted. It suggests that there is a considerable relationship between the responses and the variables considered for the respondents (Table no. 1.7).

1.4.6. Tourism Potentiality of the Island:

In order to determine the prospects of different types of tourism activities in the island Local household respondents were set to respond to a set of list of various forms of tourism and enquired about their agreement and disagreement. After the careful observations of the features of the river island Majuli, eight different types of tourism were classified namely cultural tourism, minority tourism, traditions and event tourism, pilgrimage tourism, agro, nature- based, eco and resort tourism (Table no. 1.8).

On the basis of the opinion of the Local household respondents it is found that, 70 percent respondents believes the island has considerable potentiality of been developed as a cultural tourism destination, 53.6 percent opines as a nature-based tourism destination and 50 percent suggest about event-based tourism activities destination. In consideration to agro based tourism destination, the findings reveals that good numbers of respondents view it as a prospective area of tourism development, but still not considered as a crucial element of tourism. Other forms of tourism destination formats are straight away rejected by majority of respondents.

Table No. 1.8.**Potentiality of tourism activities in the River Island**

Tourism prospects in Majuli	Yes	No	Missing Values	Total
Cultural Tourism	290 (70)	90 (21.7)	34 (8.2)	414
Minority Tourism	61 (14.7)	319 (77.1)	34 (8.2)	414
Traditional & Events Tourism	207 (50)	173 (41.8)	34 (8.2)	414
Pilgrimage Tourism	114 (27.5)	266 (64.3)	34 (8.2)	414
Agro Tourism	146 (35.3)	234 (56.5)	34 (8.2)	414
Nature- Based Tourism	222 (53.6)	158 (38.2)	34 (8.2)	414
Resort Tourism	104 (25.1)	276 (66.7)	34 (8.2)	414
Eco Tourism	107 (25.8)	273 (65.9)	34 (8.2)	414

Note: Figures in parentheses (italics) represents percentage.

Source: Enumerated from Field Survey.

In the process of determining the degree of relationship between the list of prospective tourism destination formats in the respective villages and socio-demographic profiles of the respondents, it has been found that only in case of gender and occupational status of the respondents, the null hypothesis has been rejected fully (Table no 1.9).

Table No. 1.9.**Chi square test: Potentiality of tourism activities in the River Island**

Sl. No.	Variables	Gender	Educational status	Occupational Status
1.	Cultural Tourism	$\chi^2 = 10.883^*$	$\chi^2 = 9.289$	$\chi^2 = 84.005^*$
2.	Minority Tourism	$\chi^2 = 6.922^{**}$	$\chi^2 = 13.809$	$\chi^2 = 88.052^*$
3.	Traditional & Events Tourism	$\chi^2 = 7.147^{**}$	$\chi^2 = 12.624$	$\chi^2 = 82.720^*$
4.	Pilgrimage Tourism	$\chi^2 = 6.885^{**}$	$\chi^2 = 5.154$	$\chi^2 = 85.852^*$
5.	Agro Tourism	$\chi^2 = 6.861^{**}$	$\chi^2 = 6.160$	$\chi^2 = 83.471^*$
6.	Nature- Based Tourism	$\chi^2 = 8.704^{**}$	$\chi^2 = 8.218$	$\chi^2 = 86.536^*$
7.	Resort Tourism	$\chi^2 = 8.013^{**}$	$\chi^2 = 9.614$	$\chi^2 = 88.765^*$
8.	Eco Tourism	$\chi^2 = 7.574^{**}$	$\chi^2 = 5.170$	$\chi^2 = 81.277^*$

Source: Enumerated from field survey.

Note: CC: Contingency Coefficient.

* Significant at 01 percent level of significance.

** Significant at 05 percent level of significance.

1.4.7. Awareness about the Majuli Cultural Landscape Region Act, 2006:

Enactment of the Majuli Cultural Landscape Region Act, 2006 is one of the major developments in the process of acquiring the World Status Site status for the island. On the basis of the data collected from respondents it was found that only 391 respondents responded to the question that “Whether they are aware about the Majuli Cultural Landscape Region Act, 2006?”

Table No. 1.10.

Classification of Local household respondents on the basis of their awareness about MCLRA, 2006

Do you know about MCLRA, 2006?		Frequency	Percent
Valid	Yes	210	50.70
	No	181	42.70
	Rejected / Missing	23	5.60
	Total	414	100.00

Source: Enumerated from Field Survey.

Of the total responded response, 210 respondents (53.71 percent) are aware about the Act, whereas, 181 response sheets (46.29 percent) recorded that respondents are not aware about the act till the date of data collection. The overall response rate for the said question was approx. 93.10 percent with 23 respondents not willing to record and summarily rejected (Table no. 1.10).

Table No. 1.11.

Chi square test: Local household respondents

Sl. No.	Variables	Chi square (χ^2) Value	Inference Drawn
1.	Gender	$\chi^2 = 2.270$, df=2	Ho cannot be rejected
2.	Educational Status	$\chi^2 = 12.706$, df=2	Ho cannot be rejected
3.	Occupational Status	$\chi^2 = 24.191^*$, df=14 CC: 0.235	Ho rejected, Weak relationship
4.	Age	$\chi^2 = 23.163^*$, df=2 CC: 0.230	Ho rejected, Weak relationship

Source: Enumerated from field survey.

Note: CC: Contingency Coefficient.

* Significant at 05 percent level of significance.

In order to test the degree of relationship between MCLRA, 2006 awareness frequency of Local household respondents and socio-demographic profile of the respondents in terms of gender, educational, occupational and age status, it has been noticed that awareness of the respondents varies with age and occupational status. The Pearson Chi square value is statistically significant in case of occupational status ($p < 0.05$, 24.191, df=14) and age ($p < 0.05$, 23.163, df=2) classification of respondents (Table no. 1.11).

The results of the present study reveals that with respect to tourism based activities in the river island Majuli, the socio - demographic variations of the residents of the Majuli, shows that there is a considerable difference of opinion among them. This also helps to determine that tourism potentiality in the river island Majuli significantly varies for differing socio – demographic status of the respondents.

Majuli being one of the biggest inhabited river islands of the world, and holding unique cultural cum religious contents, ironically still the areas of tourism are not fully explored. There are numerous challenges in the path of achieving a fully developed tourism destination status. One of the major such problems is the connectivity to and from Majuli. Connectivity within the island and with the outside world in certain situations is good to maintain and preserve its identity, but in certain situations it creates a bottleneck for the overall development of the region. There is no doubt that due to the extreme connectivity situation in the region, Majuli is offering a different and unique set of tourism experience in comparison to the main land of the state. Though, this extreme mobility factor is bringing a severe hardship for the local communities to communicate with the mainland, especially matter gets more troublesome in flood seasons and in medical emergencies. Government of Assam under the banner of National Rural Health Mission is trying to improve the health situation in the island.

1.5. CONCLUSION:

For the last one and half decade or so it has been observed that the Indian tourism industry has developed in a remarkable pace. Realizing the benefits of tourism and its related activities, various countries have taken pioneering steps in this field and instances are there where few of them achieved remarkable success. Majuli holds a unique ranges of demographic, cultural, religious and natural resources which are of its kind. The isolation of the island and presence of a large number of wetlands located in the island have given shelter to varied migratory and non-migratory birds, apart from exotic fish and other aquatic species. With the privilege of being one of the biggest river islands of the world, proper marketing and communication network of tourism activity can bring radical changes in the field of tourism and to achieve such growth rate in the region the support and assistance of the host population is highly sought.

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Price Forecasting of Green Chilies in the Wholesale Vegetable Markets of Assam: A Time Series Approach

Surajit Saikia

During the past decades, vegetable markets of Assam show a volatile character in its price. The vegetable market of Assam in general and the wholesale market in particular, import fresh vegetables from different parts of the country like Shillong, Kolkata and Delhi markets etc. As the local vegetable hubs like Barpeta, Hajo and Kharupetia has not contributed sufficiently, the winter price-fall of the vegetables is delayed in most of the places of the State ^[32]. However, the price of the vegetables have been affected by many diverse factors like cyclic changes, seasonal factors such as demand, supply, production etc, Trend and irregular variations. Some of these events may occur randomly and only once during a person's lifetime, while others may be repetitive in nature. Regardless of these circumstances, forecasting the price of green chilies especially on a monthly basis is not usually an easy process. However, the importance of price forecasting in the time of increased uncertainty, is obvious when one considers the production, investment and marketing decisions which must be made by producers, processors and suppliers in the vegetable marketing.

Forecasting is a process in management to assist decision making. It is also described as the process of estimation in unknown future situations. In a more general term it is commonly known as prediction which refers to estimation of time series or longitudinal type data. The most popular model for this method is the Box-Jenkins model introduced by statisticians George Box and Gwilym Jenkins ^[33]. Box-Jenkins has suggested the time-series autoregressive integrated moving average (ARIMA) model for forecasting. Like any other such methods, it requires historical time series data on the variable under forecasting.

^[32] The Assam Tribune, "staff report", Guwahati, Saturday, November 20, 2010.

^[33] Box, George; Jenkins, Gwilym (1970), "Time Series Analysis: Forecasting and Control", San Francisco: Holden-Day.

Research Gap and Rationale of the study:

From the various literatures reviewed, it has been observed that the Box-Jenkins ARIMA model is used to forecast different product price like beef, Gold price, electricity consumption and price etc. but a few literatures were found applying Box-Jenkins ARIMA model for forecasting the price of the vegetables. Taking these as research gap, an effort has been made in this study to forecast the price of the green chillies for the wholesale markets of Assam. The emphasis of the study is univariate time series analysis on the vegetable price and three wholesale markets were purposively selected.

Objectives of the study:

The specific purpose of this paper is:

1. To study the price oscillation of green chillies in the markets of Assam.
2. To determine the best ARIMA forecasting model for the selected wholesale markets and to forecast the price for the next 8 months.

Methodology of the study:

As on September 2012, there are 407 Wholesale markets in Assam registered under 24 Regulated Market Committees of the Assam State Agriculture Marketing Board. However, all the markets are not functioning properly and the record of the vegetables price are unavailable to use. In this study three wholesale markets of Assam were purposively selected. The present study is entirely based on secondary data obtained from Assam State Agricultural Marketing board (ASAMB) and AGMARKNET (National portal for agricultural commodities data). For this study ten years green chillies price from 2005 to 2014 were used. The analysis of the study was carried out with the help of the following software package Microsoft excel, Stata 9 and Gretl. To fulfill the objectives of the study, monthly time series data have been generated with the help of the following stage:

The data received from ASAMB and AGMARKNET were in raw form and the wholesale price index was constructed with the help of *Laspeyres Method* of price index^[34]. The formula for constructing the index was:

$$p_{01} = \frac{\sum p_1 q_o}{\sum p_0 q_o} \quad p_{01} = \frac{\sum p_1 q_o}{\sum p_0 q_o}$$

^[34] Gujarati, D; Porter, D & Gunasekar, S; (2011) "Basic Econometrics" McGraw Hill Education (India) Private Limited; 5 edition, September 2011; ISBN-13: 978-0071333450.

In the second stage, the wholesale price indexes were interpolated with the simple linear interpolation method to make the data time series. The linear interpolation involves estimation of a new value or to determine the missing values by connecting two adjacent known values with a straight line ^[35]. The formula used was given below:

$$y = y_1 + (x - x_1) \frac{y_2 - y_1}{x_2 - x_1}$$

$$y = y_1 + (x - x_1) \frac{y_2 - y_1}{x_2 - x_1}$$

The third stage deseasonalising the wholesale price Indexes of the green chilies. In this study, monthly indexes consist of 12 indexes that are representative of the data for a 12-month period was taken. Each index is a percent, with the average for the monthly data equal to 100. That is, each monthly index indicates the level of quantity and price variable in relation to the monthly average of 100.0. For example, a typical index of 96.0 for January indicates that quantity and price are usually 4 percent below the average for the month. Whereas, an index of 107.2 for October means that the variable is typically 7.2 percent above the monthly average. So, for better interpretation log wholesale price indexes is used in the study.

Several methods have been developed to measure the typical seasonal fluctuation in a time series. The method most commonly used to compute the typical seasonal pattern is called the ***Ratio-to-Moving-average Method*** ^[36]. It eliminates the trend, cyclical, and irregular components from the original data (Y). In the following discussion, T refers to trend, C to cyclical, S to seasonal, and I to irregular variation.

The last stage is to test the stationarity, ARIMA estimation and Forecasting future price of the available data. For forecasting the green chilies price the Box Jenkins approach was used. Box-Jenkins has suggested the time-series autoregressive integrated moving average (ARIMA) model for forecasting. Like any other such methods, it requires historical time series data on the variable under forecasting. It assumes that the future values of a time series have a clear and

^[35] Gujarati, D; Porter, D & Gunasekar, S; (2011) “*Basic Econometrics*” McGraw Hill Education (India) Private Limited; 5 edition, September 2011; ISBN-13: 978-0071333450.

^[36] Kaul, R. and Chowdhury, S. R; (2007) “*Applied Statistics Economic statistics*” Reader, Department of Statistics, Lady Shri Ram College for Women Lajpat Nagar, New Delhi – 110024 04-Jan-2007 (Revised 20-Nov-2007)

definite functional relationship with current, past values and white noise. In statistics and econometrics and in particular in time series analysis an Autoregressive Integrated Moving Average (ARIMA) model is a generalization of an Autoregressive moving average (ARMA) model. These models are fitted to time series data either to better understanding the data or to predict future points in the series (Forecasting). They are applied in some cases where data show evidence of non-stationary where an initial differencing step (corresponding to the “integrated” part of the model) can be applied to reduce the non-stationary. Non-seasonal ARIMA models are generally denoted by p, d and q, where parameters p, d and q are non-negative integers, p is the order of the Autoregressive model, d is the degree of differencing and q is the order of the moving average model. For e.g. ARIMA (1, 0, 0), is AR (1), ARIMA (1, 0, 0) is I (1) and ARIMA (0, 0, 1) is MA (1).

There are three steps in Box-Jenkins ARIMA model.

They are:

1. Stationarity testing.
2. Estimation of model’s parameters.
3. Diagnostic checks.

The stationarity of the data is tested with two different methods. The **Augmented Dickey-Fuller (ADF) Test** and The **Phillips-Perron Test** ^[37].

The Augmented Dickey-Fuller (ADF) Test:

$$\Delta y_t = \beta_1 + \beta_2 + \delta y_{t-1} + \sum_{i=1}^m \alpha_i \Delta y_{t-i} + \varepsilon_t$$

$$\Delta y_t = \beta_1 + \beta_2 t + \delta y_{t-1} + \sum_{i=1}^m \alpha_i \Delta y_{t-i} + \varepsilon_t$$

Where, ε_t is a pure white noise error term. $\Delta y_{t-1} = (y_{t-1} - y_{t-2})$, $\Delta y_{t-2} = (y_{t-2} - y_{t-3})$ etc.

$\alpha = 0$, In ADF we still test whether $\alpha = 0$ and the ADF test follows the same asymptotic distribution as the DF statistic. So, the same critical values can be used.

The Phillips-Perron Test is named after Peter C. B. Phillips and Pierre Perron, which is used to test the null hypothesis that a time series is integrated of order 1. It builds on the Dickey-Fuller test of the null hypothesis $P = 0$ in $\Delta y_t = P y_{t-1} + u_{t-1}$ $\Delta y_t = P y_{t-1} + u_{t-1}$, where Δ is the first

^[37] Tsay, R.S.(2002); “*Analysis of Financial Time Series*” Wiley-Interscience Publication, John Wiley & Sons, INC.

difference operator. The Phillips-Perron test addresses the issue that the process generating data for y_t might have a higher order of autocorrelation than is admitted in the test equation making y_{t-1} endogenous and thus invalidating the Dickey-Fuller test. The augmented Dickey-Fuller test addresses this issue by introducing lags of Δy_t as regressor in the test equation, the Phillips-Perron test makes a non-parametric correction to the T-test statistic.

Autoregressive (AR) models:

- ✓ Autoregressive (AR) models are models in which the value of a variable in one period is related to its values in previous periods.
- ✓ AR (p) is an autoregressive model with p lags.

$$y_t = c + \sum_{i=1}^p \phi_i y_{t-i} + \varepsilon_t$$

$$y_t = c + \sum_{i=1}^p \phi_i y_{t-i} + \varepsilon_t$$

Where ϕ_1, \dots, ϕ_p are parameters, c is a constant, and the random variable ε_t is white noise. Some constraints are necessary on the values of the parameters so that the model remains stationary. For example, processes in the AR(1) model with $|\phi_1| \geq 1$ are not stationary.

Moving Average (MA) models:

- ✓ Moving Average (MA) models account for the possibility of a relationship between a variable and the residuals from previous periods.
- ✓ MA (q) is a moving average model with q lag.

$$y_t = \mu + \varepsilon_t + \sum_{i=1}^q \theta_i \varepsilon_{t-i}$$

Where $\theta_1, \dots, \theta_q$ are parameters of the model. μ is the expectation of y_t (often assumed to equal 0), and the $\varepsilon_t, \varepsilon_{t-1}, \dots$ are again, white noise error terms.

Autoregressive Moving Average ARMA models:

Autoregressive Moving Average (ARMA) model combine both p Autoregressive terms and q Moving Average terms also called ARMA (p,q).

$$y_t = c + \varepsilon_t + \sum_{i=1}^p \varphi_i y_{t-i} + \sum_{i=1}^q \theta_i \varepsilon_{t-i}$$

$$y_t = c + \varepsilon_t + \sum_{i=1}^p \varphi_i y_{t-i} + \sum_{i=1}^q \theta_i \varepsilon_{t-i}$$

Results and Discussion:

Summary Statistics:

In order to have a basic idea of the data analysed in this study, a summary statistic have been developed for the three wholesale markets of Assam. Summary statistics summarize and provide information about your sample data. It tells you something about the values in your data set. The summary statistic was shown in table 1.

Table 1. Summary statistics of the price series.

Statistic	Howly	Lanka	Kharupetia
Mean	5.08	5.58	5.67
Median	5.10	5.55	5.67
Maximum	6.19	7.05	6.92
Minimum	3.97	4.2	4.61
Standard Deviation	0.5350	0.5784	0.5311
Skewness	0.0700	-0.0527	0.1599
Kurtosis	-0.6967	-0.4584	-0.4666
Coefficient of variation	0.1053	0.1037	0.0937

From the table it can be seen that the Kharupetia wholesale market has the highest mean and median values as compared to the other two markets. In terms of highest price, Lanka wholesale market has the maximum value and the Howly Wholesale market has the minimum value. The Coefficient of variation for the three markets are 0.1053, 0.1037 and 0.0937 respectively. It is the simplest measure to measure the volatility and it also indicates the presence of volatility in the price series.

Stationarity Test:

In order to test the stationarity, ADF Test (Augmented Dickey Fuller test) and PP Test (Phillips-Perron Test) has been conducted on the dependent variable i.e. indices of wholesale price of Green chilies. The test has been conducted with the following hypothesis.

Our null hypothesis for this test was –

H_0 : Y has a unit root.

In the table 2, the results of ADF and PP test were shown.

Table 2. ADF and PP test of unit root.

Confidence level	ADF test critical values					PP test critical value				
	test statistic	1%	5%	10%	P*	test statistic	1%	5%	10%	P*
Lanka Z(t)	-4.416	-3.504	-2.889	-2.579	0.0003	-4.335	-3.504	-2.889	-2.579	0.0004
Kharupetia Z(t)	-3.988	-3.504	-2.889	-2.579	0.0019	-4.014	-3.504	-2.889	-2.579	0.0007
Howly Z(t)	-3.919	-3.504	-2.889	-2.579	0.0015	-4.202	-3.504	-2.889	-2.579	0.0013

The price series is said to be stationarity at level i.e. integration is equal to 0. Since the test critical values of the two tests are less than the test statistic, therefore it can be said that the data series is stationary at 5% and 10% significant level (since p value is less than 5%) but according to ADF test the Kharupetia and Howly wholesale data are not stationary at 1% significant level so as to Howly wholesale market according to PP test. Therefore the null hypothesis cannot be rejected. In this study the calculation has been done by taking the 5% significant level for all the three markets. The ADF and PP test indicates that the price series is stationary and is integrated of lag order 0 i.e. $I(0)$.

After a time series has been stationarized by differencing, the next step is fitting an ARIMA model by determining whether AR or MA terms are needed to correct any autocorrelation that remains in the differenced series. The most systematic way of doing is by looking at the autocorrelation function and partial autocorrelation function plots. By looking at it one can tentatively identify the numbers of AR and/or MA terms that are needed ^[38].

Autocorrelation Function (ACF):

^[38] Nau R.: (2016) "ARIMA models for time series forecasting" Fuqua School of Business, Duke University, <http://people.duke.edu/~rnau/411home.htm>.

Autocorrelation is the proportion of the auto covariance of the y_t and y_{t-k} to the variance of a dependent variable y_t . The ACF is used to determine the p values in the Autoregressive term i.e. AR(p).

$$ACF(k) = p_k = \frac{\text{cov}(y_t, y_{t-k})}{\text{var}(y_t)} \qquad ACF(k) = p_k = \frac{\text{cov}(y_t, y_{t-k})}{\text{var}(y_t)}$$

The ACF (k) gives the gross correlation between y_t and y_{t-k} . For example in AR(1) model, the ACF is $ACF(k) = P_k = \gamma^k$. An AR model is one which depends on the past values say, $y_t, y_{t-1}, y_{t-2}, \dots$ etc.

Partial Autocorrelation Function (PACF):

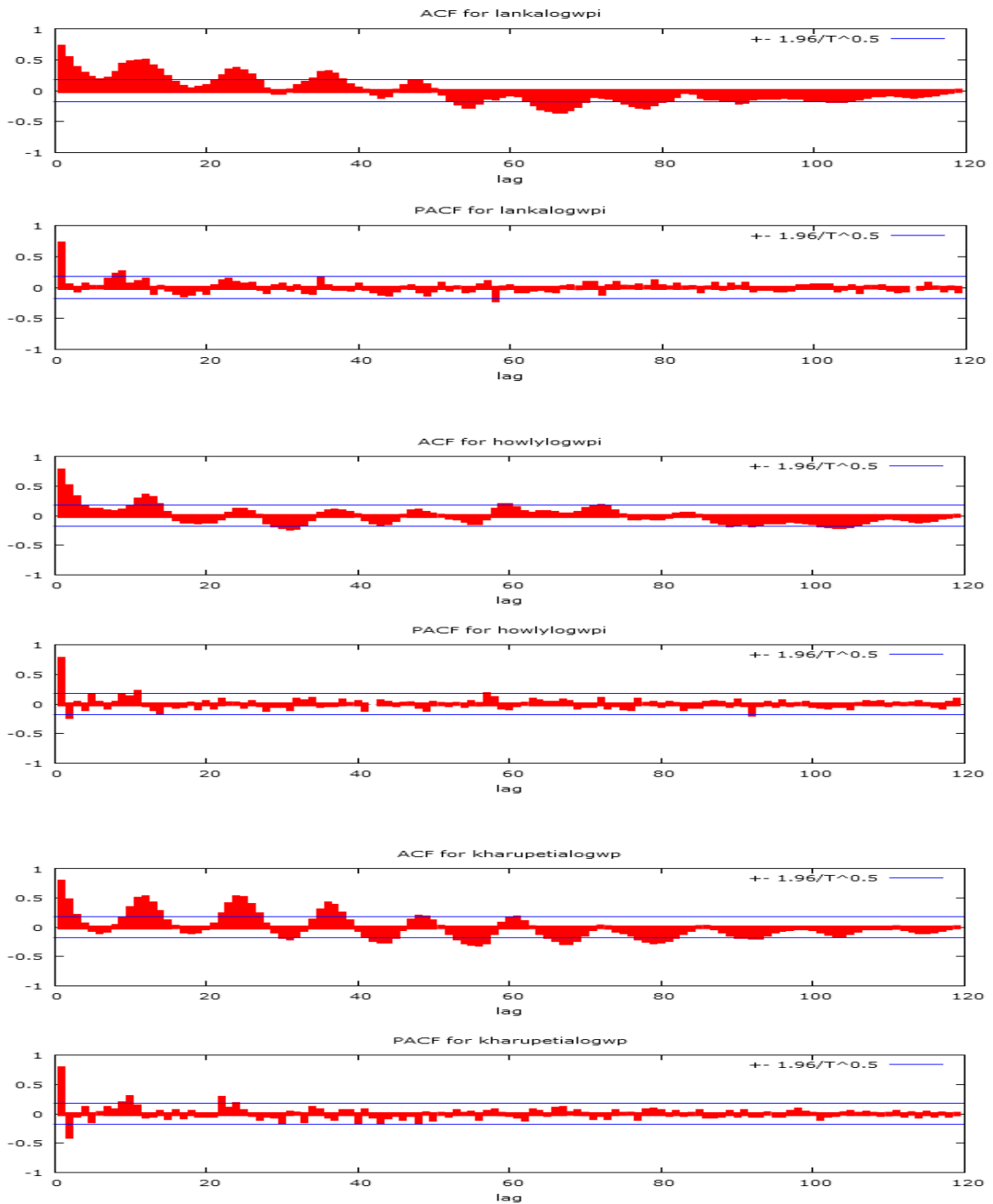
PACF is the simple correlation between y_t and y_{t-k} minus the part explained by the intervening lags. A partial autocorrelation is the amount of correlation between a variable and a lag of itself that is not explained by correlations at all lower-order-lags. The autocorrelation of a time series Y at lag 1 is the coefficient of correlation between Y_t and Y_{t-1} , which is presumably also the correlation between Y_{t-1} and Y_{t-2} . But if Y_t is correlated with Y_{t-1} , and Y_{t-1} is equally correlated with Y_{t-2} , then we should also expect to find correlation between Y_t and Y_{t-2} . In fact, the amount of correlation we should expect at lag 2 is precisely the square of the lag-1 correlation. Thus, the correlation at lag 1 "propagates" to lag 2 and presumably to higher-order lags. The partial autocorrelation at lag 2 is therefore the difference between the actual correlation at lag 2 and the expected correlation due to the propagation of correlation at lag 1.

$$p_k = \text{corr} [y_t - E^*(y_t | y_{t-1}, \dots, y_{t-k+1}), y_{t-k}]$$

$$p_k = \text{corr} [y_t - E^*(y_t | y_{t-1}, \dots, y_{t-k+1}), y_{t-k}]$$

Where $E^*(y_t | y_{t-1}, \dots, y_{t-k+1})$ $E^*(y_t | y_{t-1}, \dots, y_{t-k+1})$ is the minimum mean squared error predictor of y_t by $y_{t-1}, \dots, y_{t-k+1}$. For AR(1) model, the PACF is γ for the first lag and then cut off.

The ACF and PACF graphs of the three wholesale markets were given below:



Theoretically, the ACFs and PACFs are available for various values of the lags of Autoregressive (AR) and Moving Average (MA) components i.e. p and q . Therefore, a comparison of the correlograms (plot of sample ACFs versus lags) of the time series data with the theoretical ACFs and PACFs lead to the selection of the appropriate ARIMA (p,q) model. The

ACF and PACF graphs are drawn at level i.e. at lag order 0. From the above given graphs it can be identified that the ACF graphs shows a declining trend for the three wholesale markets and the PACF is indicating for a lag order of 1 and 2.

AIRMA Model Estimation:

The table given below shows the different parameters for estimation of ARIMA models for the three markets. In this process different parameters were used to identify the best ARIMA model for the three markets i.e. LR, FPE, AIC, HQIC and SBIC. LR stands for Likelihood Ratio test, FPE stands for Final Prediction Error, AIC stands for Akaike Information Criteria, HQIC stands for Hannan and Quinn Information Criteria and SBIC stands for Schwarz's Bayesian information criterion.

Table 3: ARIMA Models estimation.

Selection order criteria
 Sample: 2005:01 to 2014:12

Number of obs = 116

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-226.002				.010407	3.94831	3.97722	4.01953
1	-94.2971	263.41	9	0.000	.001255	1.83271	1.94834*	2.11756*
2	-82.6131	23.368*	9	0.005	.001198*	1.78643*	1.98879	2.28493
3	-79.2779	6.6705	9	0.671	.001322	1.8841	2.17319	2.59624
4	-75.8516	6.8526	9	0.652	.001458	1.9802	2.35601	2.90598

Endogenous: lankalogwpi howlylogwpi kharupetialogwpi
 Exogenous: _cons

Note: The star sign indicates the best ARIMA model selected for the study.

From the table it can be observed that the LR, FPE and AIC indicates that an ARIMA model of lag order of 2 is best fitted for forecasting the price of the three wholesale markets. According to these criteria lower the values of the criteria is the best for forecasting model but the p-value must be less than the significant level. In the table given above, the p-value at lag order 3 and 4 is must higher than the significant level (5%). So, in this study, an ARIMA model of (1, 0, 2) is selected for forecasting the green chilies price. Where AR(1), I(0) and MA(2).

Sample forecast of the green chilies price series:

Forecasting was done for 8 months on the monthly price series data for January, 2015 to August, 2015 with the help of ARIMA (1, 0, 2) model along with standard error are shown in a different column in table 4, table 5 and table 6. In order to forecast the price of green chilies, there are different techniques available. However, the forecasting of contemporaneous, exogenous variables involves error which is incorporated in the tables while forecasting.

Table 4. Shows the forecasted price of Green chilies of Kharupetia Wholesale Market.

Months	Actual Values	ARIMA (1, 0, 2) Values	Standard Error
January	6.03	5.85	0.18
February	5.77	5.78	-0.01
March	5.66	5.74	-0.07
April	5.72	5.71	0.01
May	5.92	5.68	0.24
June	6.45	5.66	0.79
July	6.28	5.64	0.64
August	6.06	5.63	0.43

Months	Actual Values	ARIMA (1, 0, 2) Values	Standard Error
January	6.15	5.97	0.18
February	5.98	5.88	0.1
March	5.96	5.80	0.16
April	5.74	5.75	-0.01
May	5.55	5.72	-0.17
June	5.91	5.70	0.21
July	5.72	5.69	0.03
August	5.65	5.68	-0.03

Table 4. Shows the forecasted price of Green chilies of Lanka Wholesale Market.

Months	Actual Values	ARIMA (1, 0, 2) Values	Standard Error
January	5.33	5.38	-0.05
February	4.91	5.45	-0.54
March	4.98	5.45	-0.47
April	5.29	5.44	-0.15
May	5.29	5.43	-0.14
June	5.49	5.43	0.06
July	5.03	5.42	-0.39
August	4.76	5.42	-0.66

From the tables it can be observed that the ARIMA (1, 0, 2) Model has forecasted a very close values for the three markets. However, in case of Howly and Lanka wholesale market the forecasted values have highest standard error in terms of prediction of the price series. By observing the table, it is clear that the forecast of the wholesale price of the green chilies is less inaccurate and is reliable for decision making process.

Conclusion:

This paper proposes ARIMA models to predict the monthly prices of the green chilies for Lanka, Howly and Kharupetia wholesale markets of Assam. The model offers a good technique for predicting any fluctuated variable. The ARIMA model strength lies in the fact that the method is suitable for any time series data and the forecaster does not require any future values as parameters. However, the model has certain limitation like requirement long time series data, continuous data and the model does not guarantee perfect forecast. In this paper, ARIMA (1, 0, 2) model found to be best fitted for forecasting the green chilies price and the forecasted data shows a declining trend over time. However, it would be interesting to do further research on the factors that influence the price of the green chilies, such as the growth of the population of consumers, the production in the region, the trend, and so on. This would consolidate better planning and decision making.

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