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Effect of Work/Family Demand, Work/ Family Conflict on Job Satisfaction : A Case of SAIL Women Employees

Anuradha Nayak* & Mrinalini Pandey**

In recent years, work-life balance has become one of the main interesting topic at the academic, business, political and social level.Work and family issues have potential impact on employees, family members as well as on organizations. In the light of the increasing number of women in the manufacturing industry, there is a need to examine the phenomenon of the work-life balance of Indian women working in manufacturing sector in greater depth. The purpose of this study is to investigate the effect of work demand, family demand work-family conflict and family-work conflict on job satisfaction of women employees in the unit of Steel Authority of India Limited, Jharkhand, India. A total number of 250 usable questionnaires were personally retrieved from women employees in the research location. Simple random sampling method was used to collect the data. The hypothesized relationships were tested using AMOS version 21 through path analysis. Work demand was found to exert a significant positive impact on work-family conflict and it is negatively related to job satisfaction. Similarly, the results demonstrate that a high level of family demand resulted in high level of family-work conflict. The empirical results indicate that further family-work conflict also exerted a significant negative effect on job satisfaction. There is weak association between family demand, family-work conflict and job satisfaction.

Keywords : Work Demand, Family Demand, Work-family Conflict, Family-work Conflict, Job Satisfaction, Women Employees.

Introduction

The concept of work-life balance emerged back in 1970's in USA, early 1980's in Western Europe and Asia (Kim & Ling, 2001). In recent years, work-life balance has become one of the main interesting topic at the academic, business, political and social level. Work and family issues have potential impact on employees, family members as well as on organizations. This subject has caused a rising interest among researchers based in the developed Western countries. It is a fact that when a person expend more time on the job, the more conflict will be exist between work and family life. Indian women employees are becoming more stressful as compared to those working

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in Western countries. The raising numbers of dual-earner and single-parent households along with enlarged participation of women in the workforce has condensed the traditional family household (Married single-earner male with a non-employed wife and children) to a minority group (Parasuraman & Greenhaus, 1997). Therefore, with the rising proportion of females in the workforce, more and more Indian women are facing barrier between the demands of work and family especially as family life is traditionally valued high in the Indian society.

Females constitute 44 per cent of the workforce and hold nearly 40 per cent of management position (Farrell, 1986). Over the last decade, Indian society has witnessed a surge in the participation of women in the workforce, especially in the IT industry (Valk, R. & Srinivasan, V (2011). The growing number of women in the manufacturing industries has also led to an increasing interest from academia and practitioners on the topic of work-life balance. Earlier, manufacturing sector is dominated by the male employees. According to the study of Chaudhary, B and Panigrahi, A.K.(2013), almost 20 per cent of the female employees participate in organized manufacturing sector. Female participation rate was low as compared to men employees. Further, Lahoti & Swaminathan (2013) explained that proportion of women have been increasing across all the sectors. In manufacturing sector, it increased at 23 per cent as compared to earlier. Sharma & Saha (2015) found that the ratio of urban women employed in manufacturing sector significantly increased as compared to other sectors like service, agriculture, etc.

In the light of the increasing number of women in the manufacturing industry, there is a need to examine the phenomenon of the work-life balance of Indian women working in manufacturing sector in greater depth. Research on the work-family balance of women has recognized in other sector like IT, service, Banking rather than manufacturing sector (Bhatnagar & Rajadhaksha, 2011). Additionally, the authors emphasize that in contrast to women in western societies, many Indian women, especially those in traditional joint and extended families are compelled to take care of the family member. It has been assumed that the male member is a bread winner in a traditional one-earner family, fully presented for work because he has a spouse who will take care of family responsibilities (Shellenbarger, 1992). But women have to assume both responsibilities of their work and family simultaneously even after entering into the job. It is because they are not spared from the home responsibilities today also and represented stereo typically

as their role is limited to household chores and take care of their child/husband/other family member (Sorensen, A & Mclanahan., 1989) and assumed as a perfect house-wife. Hence, sometime Indian women have to compromise with their husband for leaving their job after be a more earner as compared to her husband.

Parikh (1998) in his work state that it becomes very difficult for mothers as they have to manage the external interfaces of work and career, management of home and children. This imbalance may affect organizational outcome such as job satisfaction, organizational commitment, and intension to turnover, absenteeism, job performance, career satisfaction and career success (Allen et al., 2000). It is, therefore, imperative to understand the relationships between work-life conflict and organizational outcomes.Job satisfaction is chosen in the current study as dependent variable among all organizational outcomes because of two reasons. First, job satisfaction is important because it further affect all outcomes such as commitment (Rehman et al; 2013), absenteeism and turnover intension (Javed, M; 2014). As it is evident that a satisfied employee is accounted as committed and commitment is indication for other organizational output and effective operations (Robbins & Coulter, 2005). Hence, organization outcomes rely upon job satisfaction. Another reason is that the association of work-family conflict with job satisfaction representing a variety of occupations, such as hotel employees, social workers, college professors, software workers, police personnel etc. (e.g. Grandey et al., 2005; Namasivayam and Zhao, 2007; Neerpal Rathi Barath M, 2013). Nevertheless, the influence of work-family conflict on this outcome among women employees remains relatively unexplored, particularly in the Indian context.

Despite the rather large literature concerning work and family-related concepts, the majority of studies have been done in the United States and other Western countries. As most of the work-family research has been conducted in the western countries, we cannot be sure whether the findings will be equally applicable to non-western culture like India. There is dearth of research in the Indian context.The present study develops and tests a model that specifically examines the impact of work demand on work-family conflict, the impact of family demand on family-work conflict. Further the impact of work-family conflict and family-work conflict on job satisfaction.

The proposed model has taken into account the concepts missing from previous models, and suggests a more

comprehensive examination of the antecedents and consequence of work-family conflict in Indian context. To set the stage for the model proposed in this study, a discussion of past research trends in work-family conflict has also been presented. It emerged that work-life imbalance was not only a source of concern, but also it was the major source of job dissatisfaction.

Review of Related Literature

Work-role conflict theory lays the foundation of the framework for this research. As a result of multiple role (work and non-work) responsibilities, a conflict (work-family conflict) may take place when an employee is unable to accomplish various role obligations. These conflicts may be experienced either because the time available to fulfill one role obligations makes it difficult to fulfill other role obligations or because involvement in one role lessens energy and makes it hard to meet other role obligations. Work-life conflict is important construct. Greenhaus and Beutell (1985) defined work-life conflict as "the form of inter-role conflict in which demand of one role (work or family) are incompatible with the demand of another role (family or work) or participation in one role made it difficult for employees to perform the other role effectively". Gutek et al (1991) decided two dimensions of work-life conflict, which is work-family conflict and family-work conflict. Both were clearly different and relatively independent with each other. Researchers have demonstrated that both direction of work-life conflict i.e., WFC and FWC have different antecedents and consequences (Hammer et al., 2003)

Research Model and Hypothesis

There is an increasing involvement of women in the workforce (Aycan & Eskin, 2004). Women have responsibilities towards their home in addition to managing their office time. Even so, they have to take care of their family in addition to this and devote equally time and importance to them. In a study, both family to work and work to family conflict were stronger for women as compared to men (Williams & Alliger, 1994). It was because they have to carry out home responsibilities along with their work. Generally they give more priority to their home duties, therefore work-family conflict is more common than family-work conflict (Frone, 1992; Gutek, 1991). Recognizing the critical situation of women after entering in the workplace, this study develops and tests a model that investigates the effects of work demand, family demand,work-family conflict and family work-conflict on organizational outcome such as job satisfaction. By examining the relationships shown

in Figure-1, this study contributes to existing knowledge base in the following ways :

Conceptually, several models have been boosted to explicate the relationship between work and family (Guest, 2002). The segmentation model hypothesizes that work and non work are two distinct domains of life that have no influence on each other. The spill over model hypothesizes that one domain can influence the other in either a positive or a negative way. The compensation model proposes that what may be lacking in one sphere, in terms of demand or satisfaction, can be made up in the other. A fourth model is an instrumental model whereby actions in one area facilitate success in the other. Another approach, the border theory, advanced by Clark (2000) argues that people are daily bordercrossers as they move between home and work.The final model, which has been applied here, is the conflict model. This model proposes that, with high levels of demand in all arena of life, conflicts may occur.The conflict model is considered the dominant conceptual approach for studying the work family interface (Guest, 2002; Eby et al., 2005). The conflict theory is based on the belief that sets of opposing demands arise from participation in multiple roles. Esson, L.P. (2004) tested a comprehensive model of work-family conflict by examining the work, non-work and stress related consequences of work-family conflict using a sample of 181 Jamaican high school teacher. Lu. L. et al, (2008) explored relations between work/family demands, work flexibility, work/family conflict, and work-related outcomes in the cultural context of Chinese society. Yildirim and Aycan (2008) examined the extent to which work demands (i.e., work overload, irregular work schedules, long hours of work and overtime work) were related to work-to-family conflict as well as life and job satisfaction of nurses in Turkey. Burke, Ronald J; Kouncu, Mustafa; Fiksenb, Lisa(2013) also examined the antecedents and consequences of work-family conflict and family-work conflict among the front-line hotel employee of Turkey. Kinnuen and Mauno (1998) examined the prevalence, antecedents and consequences of work family conflict among employed women and men in Finland. Literature show that there is dearth of studies which testing a model about antecedents and consequences regarding women employees of Indian context. Hence, our study tries to bridge this gap.

Work Demand and Work-family Conflict

Work-demand has been defined as "pressure arising from the excessive workloads and typical workplace time pressure such as rush jobs and deadlines

(Yang et al. 2000). This has hindered the time required to be present at home to attend the children and other family member. Pleck et al (1980) reported that work demand was positively related to work-family conflict. Past research have found positive relationship between work demand and work-family conflict (Clark, 2001; Frone et al., 1997). Kaur and Tripathi (2013) reviewed several empirical papers where it was found that work demand and work-family conflict are positively correlated. Number of hours worked per week, overtime, an inflexible work schedule, unsupportive supervisor, and an inhospitable organizational culture discovered as work demand that have played an important role in creating the conflict between their work and family roles (Frone et al. 1997). Laxmi and Gopinath, (2013) observed that work demand have become the causes of not to take care and fully concentrate on their children and other dependents whenever they need. A study was done on nursing where work demand like work overload and irregular work schedule have found positive relationship with work-family conflict (Burke & Greenglaus, 2001; Simon et al, 2004). Several studies have found that long working hours were positively related to this type of conflict, although these relations are generally weak (Bruck et al., 2002; Spector et al., 2004; Yang, Chen, Choi, & Zhou, 2000). Work demands such as overtime and shift work are also related to work-family conflict (Byron, 2005). Studies show that time pressure, work load pressure, role conflict, and ambiguity had a positive relationship with work-family conflict (Bellavia & Frone, 2005). Job stress ($\rho = 0.48$) and schedule flexibility ($\rho = -0.30$) were those work-related antecedents that have been found to have the strongest relationships with work-family interference in a meta-analytic study (Byron, 2005). He also concluded that workrelated antecedents tend to associate with more work related to interference than non-work interference. As literature shows several studies found that work demand leads to work-family conflict with positive relationship. Hence, we hypothesized that :

H_1 : Work demand (Long working hours, inflexible work schedule, unsupportive supervisor, work overload) will be positively related to work-family conflict of women employee.

Work-family Conflict and Job Satisfaction

Both Greenhaus and Beutell (1985) and Kahn and his colleagues (1964) examined work-life conflict as a uni-dimensional construct work-life conflict have bi-directional relationship that means work affect family and family affect work (Allen et al. 2000; Frone, Russell, & Cooper, 1992). Netemeyer et al., (1996)

have defined work-family conflict as a form of inter-role conflict occurring as a result of general demands and strain created by the job interfering with one's ability to perform family related responsibilities. Locke (1969) defined job satisfaction as the extent to which the expectations that an individual holds for a job match what one actually receives from the job. Nadeem and Abbas (2009) found the relationship between work-family conflict and job satisfaction. Work-family conflict was negatively related to dependent variable that is job satisfaction. Another study also revealed that there was a significant negative relationship between work to family interference and job satisfaction in the context of Pakistani culture (Akram; Hassaan; 2013). Gamage et al, (2013) conducted a study among lawyers practicing in Colombo district. The finding of this research found that there is existence of significant negative correlation between the work-family conflict and job satisfaction of practicing lawyers. It concluded that female practicing lawyers had lower degree of job satisfaction rather than among male employees. Previous researchers examined a negative relationship between job satisfaction and work to family conflict because of long working hours and more demanding job (Jayaweera, 2005). Boles and Babin (1996) showed that work-family conflict had a detrimental effect on food servers' job satisfaction. More recent research has explored the effects of each component of WFC and gender on job satisfaction (Grandey et al, 2005). The research showed that work-family conflict was negatively related to job satisfaction cross-sectional for both men and women. Research literature suggests that if interference among person arises because of work then the person may build up a negative attitude toward his or her job, resulting in lower job satisfaction (Beutell, 2010; Grandey et al., 2005; Judge et al., 2006). Recently, a study was done in hotel industry support the notion that when work roles interfere with family roles, the individual's job satisfaction is lower (Namasivayam, K. 2015). Thus, the following hypothesis can be assumed :-

H2 : Work-family conflict will be negatively related to job satisfaction of women employees.

Family Demand and Family-work Conflict

Boyar et al, (2008) explained that hours spent at family care, children and dependents at home, family support have been perceived as family demand which further lead to family-interference with work. Aryee et al., (1999); Fu & Shaffer, (2001); Lu et al., (2008) identified that family demand is an imperative fundamental factor of this direction of conflict. Demographic

variables like age of children, number of dependents and other variables like unsupportive family member intervene employee to fulfill the work responsibility effectively (Fox & Dwyer, 1999). These all variables affected work-life balance of women employee. Lu et al (2008) found that family demand like having dependent children predicted family work-conflict among the Chinese people. In the past study, family demand involved that married employees experience higher FWC than their single counterparts, and parents experienced higher FWC than non-parents (Herman & Gyllstrom, 1977). Furthermore, parents with young children experience higher FWC than those with grown children (Pleck et al., 1980; Beutell & Greenhaus, 1980). Cooke and Rousseau (1984) demonstrated that workers who held a greater number of family roles (spouse and/or parent) reported more family-work conflict. Thus we hypothesized as :–

H3 : Family demand (Having children, household responsibilities, having dependents/spouse, lack of family support) will be positively related to family work conflict of women employees.

Family-Work Conflict and Job Satisfaction

Netemeyer et al. (1996) defined the family-work conflict as role conflict resulting from general demands and strain created by the family interfering with an employee's ability to perform work related responsibilities. A study found family related antecedents is the cause of family-work conflict which further affect the organizational outcomes (Frone et al. 1992; 1997). Researcher reported family-work conflict are negatively associated with job satisfaction (Beutell, 2010; Netemeyer et al., 1996; Spector et al., 2007. Hassan, Z et al., (2014) found negative relationship between these two variables among Pakistani culture. Researcher explained that when family-work conflict is experienced, it increases the likelihood that work responsibilities will get disturbed, and disturbed work responsibilities, in turn, may negatively influence work attitudes (Kinnunen et al., 2010), resulting in lower job satisfaction (Neerpal R.B., 2013). It was because the women employee may perceive family demands and responsibilities to intervene with the fulfillment of work responsibilities. Lin, Chen, Sun (2015) done a study on the sample of tour leaders where it was found when the tour leaders' family life interfere with their work, it has a negative impact on their job satisfaction. It was explained when the work of a tour leader is influenced by family factors, he will feel dissatisfied with the job.When an individual spends more time and effort in his family role, it will definitely

lessen the time and effort he devotes in his work (Tsaur et al., 2012). Therefore, an individual may not be able to obtain the expected feedbacks and respect from his work, and will gradually become dissatisfied with his job. Hence we can hypothesize based on the the review of literature that :

H4 : Family-work conflict will be negatively related to Job satisfaction of women employees.

On the basis of above discussion, a theoretical framework has been developed.

Research Methodology

Participant and Procedure

Population of our study comprises of women employees working in steel manufacturing companyof Jharkhand named SAIL. In this study, the choice of this company for the survey has been justified because of the following reason. Steel Authority of India Limited (SAIL) is one of the largest state-owned steel making company and it is India's fastest developing public sector enterprises owned and controlled by the Government of India (Joydeep, 2013). Simple random sampling method was used for the collection of data. A formal permission was taken from the concerned organization (SAIL). After getting necessary permissions, a comprehensive list of women employees was procured from the respective organization. According to the list, participants were randomly approached from the list and survey questionnaires were given to them. They were updated about the objectives of the study and were promised regarding confidentiality of their responses. A total of 346 questionnaires were distributed to women employees. Out of 346 questionnaires distributed, a total of 264 were returned representing high response rate of 76.3 per cent. The questionnaires which are not completely filled were excluded from the study. At the end, 250 usable questionnaires were considered as sample for data analysis purposes. Before starting the final survey, a pilot study was also done on women employees of TATA group. Few revisions in the questionnaire have also been made on the basis of opinion of experts and responses.

Measure

The research instrument comprised of two parts measuring study variables. In the first part, participants were asked to provide demographic information regarding, age, education, monthly income, level of management, experience of work, etc. The second part of the questionnaire contains questions on related with subject.

Figure-1 : Proposed Research Framework

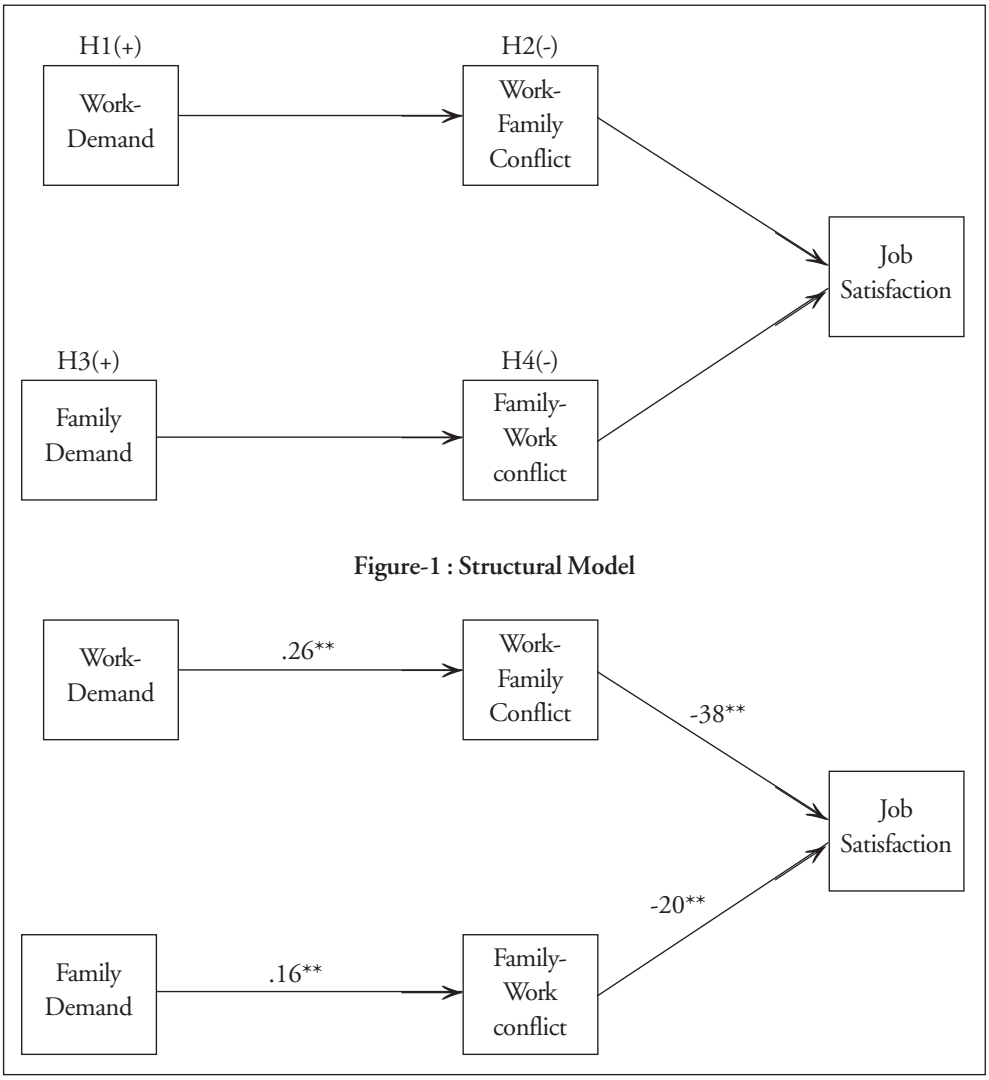

Figure-1 : Structural Model

Work Demand : Work demand was assessed by four-item scale. These scale items were developed by Boyar et al, (2003). The scale assessed the extent to which participants experienced work overload, inflexibility at work, long working hours and unsupportive supervisor. A sample items was "*On the job, I am asked to do too much work*". Items were rated on five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Higher score indicates more work demand experienced by participants.

Family Demand : This factor was assessed by four items scale. These scale items were developed by Boyar et al, (2003). A sample item was "*I am worried about my child care*". Participants were asked to indicate their response using a five-point scale anchored from strongly disagree (1) to strongly agree (5). Higher score reflect higher levels of family demand.

Work-Family Conflict : Work-family conflict was measured using the scales reported in Boles et al. (2001), Netemeyer et al.(1996) .WFC was measured with five items. A sample item was "*Demands of my work interfere with my family life*". Response were taken on 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5) Higher score reflect higher levels of work-family conflict.

Family-Work Conflict : Five items were designed to assess the family-work conflict. This scale also developed by Boles et al. (2001) and Netemeyer et al. (1996). Response were taken on 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Sample item included "*Demand of my family interferes with my work life*". Higher score reflect higher levels of family-work conflict.

Job Satisfaction : It was measured using a five-item measure asking the participant to respond to on a five-point response scale. The scale was adopted by Spector's (1985). The items used in the present study include "*I am satisfied with the amount of pay/remuneration getting from my job*". Responses to this item were measured on a 5-point Likert scale as 1 (strongly disagree) to 5 (strongly agree).

Table-1 : Construct, Items and their Source of Adoption

Construct	Measuring Items	Sources
Work demand	On the job, I am asked to do too much work.	Boyar et al, 2007, Greenhaus & Beutell, 1985
	I have to spend most of the time working in my organization rather than at home.	
	My organization does not allow me to reschedule my work according to my family requirements	
	My supervisor/boss does not support and listen to my family related problems.	

(Contd...)

Family demand	I am worried about my child care.	Boyar et al, 2007
	At home I have to handle household chores like cooking, washing etc.	
	I find lack of support of my family member in assuming the responsibilities of home.	
	At home I have the responsibilities to take care of elder parents.	
Work-family conflict	Demands at work interfere with my family life.	Boles et al., (2001), Netemeyer et al. (1996)
	Due to work-related duties, I have to make changes to my personal plans.	
	Due to work, I do not get enough time to take care of my children/dependents/other family members.	
	The amount of time, my job consumes, makes it difficult to fulfill family responsibilities.	
	I feel stressed, tensed at home due to work demand.	
Family-work conflict	Demand of my family interferes with my work life.	Boles et al., (2001), Netemeyer et al. (1996)
	I cannot concentrate on my work because I have family obligation.	
	My home life interfere with the responsibilities of work such as getting to work on time, accomplish daily tasks.	
	Things I want to do at work do not get done because of the demand of my family.	
	I suffer from stress, tension, anxiety at job.	
Job Satisfaction	I am satisfied with rules and regulations of my organization as these are flexible and human oriented.	Spector's (1985)
	I am satisfied with the amount of pay/ remuneration getting from my job.	
	My employer gives a career opportunity for promotion in my organization.	
	I am satisfied with my job description	
	I am satisfied with the working condition of organization.	

Statistical Analysis

The theoretical framework was analyzed using SPSS (Statistical Package for Social Science) version 20 and AMOS (Analysis of Moment Structure) version 21.

Result and Analysis

Demographic Profile

Demographic profile of respondents shows that 25.6 per cent of the respondents were in the age group of 21-30, i.e., 30 per cent belonged to the age group of 31-40, 24 per cent of respondent's age was between 41-50, and least percentage of respondents' i.e.20.4 per cent belonged to the age group of 51-60. Most of the women employees (30.0 per cent) were graduates, 23.2 per cent had post-graduation degree, 29.6 per cent were matriculate, 5.20 per cent of participant had a doctoral degree, rest 12.1 per cent had other professional degrees. Around 39.2 per cent of respondents' monthly income was below ₹25,000, 27.2 per cent of respondents income was between ₹25,001-50,000 21.6 per cent income was between ₹50,001-75,000 and only 12 per cent of respondent had income above ₹75,000. Twelve per cent of the working women were at the top-level position, 30.4 per cent were at the middle level while most of the women around 55.7 per cent were occupying the lower level positions. Women employee (28 per cent) had 0-10 years of work experience, 30 per cent had 10-20 years, 25.2 per cent had 20-30 years, while only 16.8 per cent of participants had experience of 30-40 years.

Structural Equation Model

The hypothesized mediated model was tested using the structural equation modeling conducted with the AMOS statistical package (Arbuckle, 1997; Version 20.0). SEM technique is an advanced technique that incorporates observed variables as well as latent variables simultaneously (Byrne, 2013). SEM can be divided into two parts that is measurement model and Structural model. Measurement model facilitates relationships between measured variables and latent variables along with assessing the measurement error while structural model is used to examine the relationship between two different latent variables (Byron, 2013).

Measurement Model

Measurement model provides reliability and validity of the construct. Internal consistency among the items was measured by using Cronbach's Alpha. Reliability of the measurement scale was found to be satisfactory, as majority of them have alpha coefficient above 0.70 (Nunnaly, 1978; Hair et al.,1998). In structural equation modeling, Confirmatory Factor Analysis has been usually used

Table-2 : Demographic Profile of Respondents

Respondents	Demographic Variables	N Percent
Age		
21-30	64	25.6
31-40	75	30.0
41-50	60	24.0
51-60	51	20.4
Educational Qualifications		
Doctorate	13	5.20
Post-Graduate	58	23.2
Graduate	75	30.0
Matriculate	74	29.6
Other	30	12.1
Level of Management		
Top	40	16.0
Middle	76	30.4
Lower	134	53.6
Monthly Income		
Below ₹25,000	98	39.2
₹25,001-50,000	68	27.2
₹50,001-75,000	54	21.6
Above ₹75,000	30	12.0
Experience of Work		
0-10	70	28.0
10-20	75	30.0
20-30	63	25.2
30-40	42	16.8

to asses construct validity (Jöreskog, 1969). In a Confirmatory Factor Analysis convergent and discriminant validity was measured to examine the extent to which measures of a latent variable shared their variance and how they are different from others. Composite Reliability (C.R), factor loading and Average Variance Extracted (A.V.E) are the three components on which convergent validity measured. Composite reliability value ranged from .69 to .89 which implies that all constructs met the recommended criterion of .7 and higher (Bagozzi & Yi, 1988). The value of factor loading was met above the recommended level of .6 (Chin, Gopal, & Salisbury, 1997). A.V.E measure the level of variance captured by a construct. Value of AVE above the ranged from .7 is very good whereas the acceptable limit of AVE is .5 (Hair et al., 1998; Fornell-Larcker 1981). The square root of AVE of each construct was larger than the correlation between the constructs which ensured the adequate discriminant validity (Chin, 1998). According to Hair et al., (2010) Composite reliability (CR>.07), Convergent Validity (CR>AVE >.05) Discriminant Validity (MSV<AVE> ASV). It can be summarized that the theoretical model represents an adequate validity (convergent and discriminant) and reliability. The details of reliability and convergent validity are drawn in Table-3. While Table-4 showing inter-correlation and discriminant validity among constructs.

Structural Model

Several criteria were used to evaluate the goodness of fit. According to Hu and Bentler (1999), the Comparative Fit Index (CFI) and the Tucker–Lewis Index (TLI) values ranging between 0.90 and 0.94 indicate an adequate fit, whereas those at or above 0.95 indicate excellent fit of data to the model. Furthermore, the Root-Mean-Square Error of Approximation (RMSEA) between 0.06 and 0.10 indicate an adequate fit and that at or below 0.05 indicate excellent fit of data (Browne & Cudeck, 1993). Lee and Wu (2010) indicated that RMSEA is acceptable or good when the value is less than 0.080. The other criteria is GFI (Goodness-of-Fit Index). The GFI is acceptable or good when the value greater than 0.900. The last criteria is CMIN/DF (chi-square fit index divided by degrees of freedom). The value of CMIN/DF in the range of 2 to 1 or 3 to 1 indicates acceptable fit between the hypothetical model and the sample data (Carmines & McIver, 1981). For x2/d.f. ratio, Joreskog (1993) recommended a value approaching 2 as acceptable. The proposed mediated model provided an excellent fit to data. The ration of CMIN/DF (599.256 /246) was 2.43, RMSEA was

Table-3 : Factor Loading, Composite Reliability, Average Variance Extracted

Factors	Variables	Factor Loading	Squared Multiple Correlation (SMC)	Composite Reliability (CR)	Average Variance Extracted (AVE)	Maximum Shared Variance MSV	Average Shared Variance (ASV)	Cronbach Alpha
Work Demand	WD1	0.85	.727	0.909	0.716	.0232	.076	.712
	WD2	0.78	.610					
	WD3	0.89	.793					
	WD4	0.86	.728					
Family Demand	FD1	0.77	.611	0.883	0.653	0.232	.067	.801
	FD2	0.83	.679					
	FD3	0.85	.725					
	FD4	0.78	.609					
Work-Family Conflict	WFC1	0.74	.545	0.923	0.707	.070	.029	.902
	WFC2	0.80	.634					
	WFC3	0.91	.826					
	WFC4	0.93	.866					
	WFC5	0.81	.663					
Family-Work Conflict	FWC1	0.78	.613	0.935	0.745	.029	.013	.868
	FWC2	0.92	.844					
	FWC3	0.94	.892					
	FWC4	0.89	.792					
	FWC5	0.77	.541					
Job Satisfac-tion	JS1	0.86	.738	0.964	0.844	.070	.037	.834
	JS2	0.92	.851					
	JS3	0.95	.897					
	JS4	0.90	.803					
	JS5	0.96	.927					

Table-4 : Inter-Correlation among Constructs

Variable	FWC	WD	FD	WFC	JS
FWC	**.858**				
WD	.132*	**.787**			
FD	.131*	0.450**	**.845**		
WFC	.096	.142*	.122	**.841**	
JS	-.148*	.080	.186**	-.253**	**.919**
Mean	3.75	2.92	3.19	4.10	1.43
S.D	1.02	1.07	.603	.920	1.11

Notes : **Correlationis significant at the .01 level (2-tailed),

* Correlation is significant at the .05 level (2-tailed)

FWC : Family work conflict , WD: Work demand, FD: Family demand,

WFC: Work-family conflict , JS: Job satisfaction,

The diagonal elements present square roots of the average variance extracted.

0.76, CFI was 0.933, GFI was 0.901, AGFI was .077 and TLI was 0.925. On the basis of above result, it can be assumed that proposed theoretical framework fit the data for this sample. The findings from the following Table infers that the proposed theoretical framework represents a better model fit (Adjusted R^2 =.525) for work-family conflict as compared to family-work conflict towards the job satisfaction (Adjusted R^2 =.438).

Hypotheses Testing

Standardized path coefficients in the structural model are presented in Figure-2 and in Table-2. As predicted, work demand was found positively related to work-family conflict (β=.26, p<.05). Further work-family conflict was found negative related with dependent variable job satisfaction (β = -.38 p<.05). Hence, hypothesis H_1 and H_3 were supported. On the other side, family demand were also found positively associated with family-work conflict (β=.16, p<.05) and further it was negatively related to job satisfaction (β= -.20, p<.05). Therefore, it also supported hypothesis H_2 and H_4. All hypotheses were supported confirming our hypotheses.

Table-5 : Fitting Indies for Structural Model

Goodness-of-Fit Index	Description	Value
λ 2 (Chi-Square statistic)	If the λ 2 statistic is non-significant and has a small value; the data fits well. Only the λ 2 statistic cannot be considered while evaluating the fit in large samples.	2.43
GFI (Goodness of Fit Index)	GFI compares the hypothesized model with the null model (Hu & Bentler, 1995)	.901
AGFI (Adjusted Goodness-of-Fit Index)	AGFI is classified similar to GFI, as the absolute indexes of fit	.077
NFI (Normed Fit Index)	NFI evaluates the global fit of the model. NFI has a tendency to underestimate fit in small samples (Byrne, 2001)	.923
CFI (Comparative Fit Index) >.90 >.90	CFI forms part of the incremental fit indices. CFI is derived from the comparison of the restricted model with that of the null model	.933
TLI (Tucker & Lewis Index)	TLI assesses the factor models.	.925
RMSEA (Root Mean Square Error of Approximation)	RMSEA as its name states estimate the overall amount of error in the model	0.76

Table-6 : Path Analysis of Structural Model

Hypothesis	Path	Result	Result
H_1	Work demand ⟶ Work-family conflict	0.26**	Accepted
H_2	Work-family conflict ⟶ Job satisfaction	-0.38**	Accepted
H_3	Family demand ⟶ Family-work conflict	0.16**	Accepted
H_4	Family-work conflict ⟶ Job satisfaction	-0.20**	Accepted

Note = P**<.05

Discussion

The present research explored the relationship between work demand and work-family conflict. The objectives have been achieved with expected findings. It was found that work demand (long working hours, inflexible work schedule, unsupportive supervisor and work overload) has positive impact with work-family conflict. This finding

is similar with the past research studies (Kaur A.P, Tripathi M.R, 2013; Boyar et al, 2007; Clark, 2001; Frone et al; 1997). The result of current study proves that higher work demand will lead to higher work-family conflict. This may be due to as women step into the job, it becomes very hard for them to find some surplus time for their family member due to work demand. Thus, work-family conflict may occur as a result. This result support the hypothesis H_1. Further it was found work-family conflict affect job satisfaction negatively that supported the hypotheses H_2. It means when there is a higher degree of work-family Conflict, it lessen the job satisfaction. It also indicates that when women employees observe that demands of their professional role impede with the fulfillment of the personal roles then it negatively affect their attitudes toward the job, which can further result in reduced job satisfaction. The same result was found in several research studies conducted in other countries as well. It was found that work-family conflict created lower job satisfaction (Bedeian et al., 1988; Bruck, et al 2002; Burke & Greenglass, 1999; Parasurman & Simmers, 2001; Perrewe et al., 1999; Rice et al., 1992; Wiley, 1987). Studies done in USA found that work-family conflict was having a negative relationship with job satisfaction. (Fox & Dwyer, 1999; Greenhaus et al., 1985s). Furthermore, the association between work to family conflict and job satisfaction was strongly negatively related with job satisfaction. It indicated that employees were not satisfied if their work interfered their family life. Yildirium and Aycan (2008) showed that work demand (work overload and irregular work schedules) were the significant predictors of work-to-family conflict and further work-to-family conflict was associated with lower job satisfaction among nurses. Allen et al. (1999) and Lin, Chen, Sun (2015) found different result that there was no association between work-family conflict and job satisfaction. Lin, Chen, Sun (2015) discovered when a person perceives that the work interferes with their family it will not reduce their job satisfaction. The reason behind this result was explained by the researcher which was that job satisfaction mostly results from work-related factors, such as support from the supervisor (Karatepe & Kilic, 2007). As a consequence, the influence of work on family actually means that it is family life that is interfered rather than the job. Therefore, it did not affect their level of satisfaction towards the job.

With regard to our hypothesized model the other objective of this research was to find the relationship between family demand and family-work conflict. Similarly, data supported hypothesis

H_3 stating that family demand and family-work conflict are positively related with each other. Sometimes women employees might be absent or get late due to increased responsibilities of family. Current study is evident that as family demand increases, it is more likely to affect family-work conflict simultaneously. This finding is similar with previous research done on women employees (Reddy et al 2008; Aryee et al., 1999; Fu & Shaffer, 2001; Lu et al., 2008; Cooke & Rousseau, 1984). Further, family-work conflict was found negatively related with job satisfaction for this sample that has supported from the findings of past studies (Hassan, at al. 2014; Abbass & Nadeem, 2009). This result confirmed hypothesis H_4. Here, the association between two variables is slightly weak as compared to hypothesis H_2 which explains that work-family conflict reduces job satisfaction more than family-work conflict does.Akaram and Hassan et al (2013) found that family-work conflict was weakly negatively related to job satisfaction. Analysis of a study conducted in hotel industry revealed that both dimensions of work-life conflict had negative relation with job satisfaction (Namasivayam & Zhaao, 2007). Burke, Ronald J.; Koyuncu, Mustafa; Fiksenb, Lisa (2013) found some contradictory result from the current study. Frontline employees with a responsibility of supervising others and those at higher organizational levels reported higher levels of work-family conflict lead to greater job satisfaction while lower levels of family-work conflict reported higher levels of job satisfaction. Namasivayam and Mount (2004) also found different result from the current study. They found positive relationship between family-work conflict and job satisfaction. Grandey et al. (2005) explained that there was no evidence of a relationship between family-work conflict and job satisfaction suggested that one dimension of work-life conflict that is work-to family conflict may have a stronger relationship with job satisfaction than the other. Kossek and Ozeki (1998) reported a consistent negative relationship between both dimensions of work-life conflict and job satisfaction suggested that reducing employees' inter-role conflict lead to positive work outcomes. Similarly, Netemeyer et al (1996) report an inverse relationship between both dimensions of WFC and job satisfaction. Namasivayama & Zhaob (2007) found family-work conflict have a negative and significant relationship with job satisfaction. This indicates that individuals who perceive that their family roles interfering with their work roles express lower job satisfaction. Likewise, the regression results indicated that work-family conflict accounted for a greater amount of variance in job satisfaction as compared to family-work conflict.

Conclusion

This study has proved the applicability of the model fit in Indian context. The conflicts arising from their family responsibilities into the work life, on the other side, conflicts arising from work life into the family roles have become key concerns for employers and the organizations. At the end of our discussion, it is concluded from the research that the women employees of SAIL are facing imbalance between work and non-work demands, due to this they are finding it difficult to be satisfied at their job. It is proved that relationship exists between WD, FD, WFC, FWC, JS. Hence, all the hypotheses are accepted. Work demand (long working hour, work overload, inflexible work schedule, and unsupportive supervisor) is positively related with work-family conflict. It indicates that when work-family conflict happens arising from these work demand, women employees feel less satisfied from their job. It is evident from the current study work-family conflict found negative impact with job satisfaction. Similarly on the other side, family demand (household chores, lack of family support, having children, having dependents/spouse) have found positively related with family-work conflict. As these demands from the family increases, it is more likely to affect work-life. As a result, family-work conflict comes out. Further, it negatively affects the job satisfaction. Negative relationship with these variables shows that higher the family-work conflict, lessen the level of job satisfaction. It has been also extracted from the current study that association between work demand, work-family conflict and job satisfaction is somewhat stronger than the relation between family, family-work conflict and job satisfaction. Women employees face more work demand that disturbing their family life. Indian women are more likely to blame their work domain and feel less satisfaction with their job.This study also proved that both dimension of work-life conflict played as an important mediator variable as Cooke and Rousseau (1984) found it. Both have different antecedents and affect job satisfaction negatively. The employers should try to overcome both the conflicts in order to get satisfied employees from both domains i.e. professionally and personally. A women employee should also get support from her family members soshecan be mentally satisfied to perform well on the job.

Limitations and Scope for Future Research

The study is limited to measuring the outcome of both directions of conflict on job satisfaction. There is no measurement of other organizational outcomes

as consequences. Researchers may extend current finding by incorporating other consequences and may check model fit regarding Indian context. This study is limited to full-time women employee the result may vary, if part-time women employees are taken as sample. Therefore, researchers must try by including part-time women employee also. This study is limited to the single industry namely SAIL. Definitely result will vary if other industries are chosen as sample. Hence researcher must include different industries in addition to this.

Practical Implication

This study provides certain implications for employer, organizations as well as employees especially for women. First, empirical result indicates work family conflict and family work conflict have detrimental effect on SAIL women employees' job satisfaction. Women employees are not satisfied with their job because of inability to balance work and personal life. Keeping in the mind of this view, current study developed model about antecedent and consequences of work-life conflict. This study helps to study the different aspect of work-life conflict with the job satisfaction. The results indicate that both dimension of work-life conflict i.e. WFC and FWC are negatively associated with job satisfaction. A better under-standing of the dimensions of work-life conflict may help management to design in terms of counseling and intervention programs to reduce the conflict arising from the both domain.

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An Analysis of Households' Access to Toilet Facility in Rural Birbhum and it's Implications for Public Policy

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Acknowledging the importance of access to toilet facilities in ensuring a decent quality of life and meeting environmental and public health challenges, this paper examines the availability and disparities in access to toilet facilities in rural Birbhum and subsequently makes an attempt to identify the determinants of such disparities. Using the Census of India data, the analysis finds that although there has been improvement in the households' coverage in terms of access to toilet facility within the premises during 2001-2011, still quite a significant proportion of rural households in Birbhum lack access to latrine toilet facility and this coexists with noticeable intra and inter block variation.Regression results also reflect that household coverage in terms of toilet facility is higher in socio economically advanced and developed blocks of Birbhum. Therefore, along with financial allocation and economic incentives, this paper argues for intensive campaigning to generate awareness regarding the benefits of constructing toilet and to induce behavioural changes for increasing the use of latrine facility.

Keywords : Sanitation, Inequity, Determinants, Rural Birbhum, India.

Introduction

The importance of access to toilet facilities in ensuring a decent quality of life and meeting environmental and public health challenges has been universally recognized. However, lack of adequate sanitation remains a major concern in most of the developing countries including India. Of late, in spite of marginal improvement in access to toilet facilities among the rural households in India, high level of service deprivation continue to coexist with significant socio-economic inequities in access to toilet facilities (Kumar, 2017; Katrak, 2014). In 2015, India with only 40 per cent of its population being covered by improved

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sanitation facilities lagged behind many developing countries including its neighbours - Bangladesh, Pakistan, Sri Lanka and Nepal (World Bank, 2016; WHO, 2015). Diarrhoea, the second largest cause of infant dealths globally, is directly attributable to lack of adequate sanitation facilities (Wankhade, 2015; Schmidt, 2014).

In India, the last three decades have witnessed the introduction of plethora of schemes to overcome the deficiency in provision of basic amenities with special provisions for the poor and marginalised population. Following the failure of top down and supply oriented approach of the schemes of 80s and 90s in improving access to sanitation facilities, in recent times, emphasis has been put on decentralized and demand driven approach with community participation (Katrak, 2014). Even these approaches have failed to achieve desirable coverage outcome and this can be attributed mainly to (a) insufficiency of fund, (b) under-utilization and inefficient utilization of available fund and (c) lack of household demand (Das, 2015; Katrak, 2014; George, 2011). The insufficiency of fund further exacerbates the inequity in access to sanitation facilities as the services may be provided to the households with higher income and/or higher literacy. Importantly, many scholars have argued that demand, access and use of sanitation facilities are intricately linked to several non-economic factor including socio-cultural practices. Peoples' lack of understanding about the links among sanitation, health and hygiene limit their demand for sanitation facilities (Mehta *et al.,* 2007). Norms based on religions and age old practices sometimes prevail over the logics of cleanliness and thus restrict peoples' choice of sanitation facilities (Jewitt, 2011).

Both the Census 2011 data and NSS 2012 data have revealed wide interstate variations in rural households' access to latrine facilities within the premise and outside the premise. Among the Indian states, West Bengal is bracketed among the groups of states having high level of deprivation of toilet facilities within the premises (Kumar, 2017). The West Bengal Human Development Report, (2004) identified the district of Birbhum as being one of the most deprived in the state in terms of human development[1]. Birbhum is one of the major districts of West Bengal with the total area of 4,545 square kilometre and accounts for almost 4 per cent of total population of the state. Birbhum is still largely a rural district with about 87 per cent of the population living in the rural areas. The district's shares of SC and ST population in 2011 were 29.50 per cent and 6.92 per cent respectively and these are higher as compared to the corresponding figures of 23.51 and

5.80 for West Bengal. Of late, many government interventions have been undertaken in the district on a massive scale with the objectives of making the lives of people better. Against this background, this paper examines disparities in access to toilet facilities in different blocks and villages of Birbhum. Further, an attempt has been made to identify the socio-economic factors that may explain the disparities in the availability of toilet facilities in Birbhum.

The next section describes the database and methodology used in this study. The third section examines the intra as well as inter-block variations in access to toilet facilities in the district. The fourth section attempts to identify the socio-economic factors that may explain spatial variation. The fifth section summarizes the main findings of the paper.

Database and Methodology

This paper uses the database on rural sanitation facilities from the Census of India (Data on Houses, Housing Amenities and Assets) for the years 2001 and 2011. They give the percentage of households with access to basic amenities and ownership of assets such as television, mobile phones, two-wheelers etc. at the ward and village level. In addition, this paper also utilises village level data from Primary Census Abstract for Birbhum that contains basic demographic data, including the number of households, population, SCs/STs and the distribution of workforce. Percentage of household having toilet (flush/pure flush, pit and service) facility within the premises is used for examining access to sanitation facilities. The village level data on population and household amenities of Birbhum district of West Bengal are utilised for the year 2011, but due to non-availability of village level data for 2001, we have restricted our analysis for 2001 to only block level.

For measuring intra-block and inter-block inequality in access to sanitation facility, Theil's T index[2] has been used. This is defined as

$$T_j = \frac{1}{N_j}\sum_{i=1}^{N_j}\frac{x_i}{\mu_j}\ln\left(\frac{x_i}{\mu_j}\right)$$

Where μ_j is the weighted (number of household in the block being the weight) mean percentage of household having latrine facility within the premises in the j^{th} block, N_j is number of villages in the block j and x_i is the percentage of household having toilet facility within the premises in the i^{th} village of the j^{th} block. If the district is divided into m blocks[3], then Theil's index is :

$$T = \sum_{j=1}^{m}\frac{N_j}{N}.\frac{\bar{x}_j}{\mu}.T_j + \sum_{j=1}^{m}\frac{N_j}{N}.\frac{\bar{x}_j}{\mu}.\ln\left(\frac{x_j}{\mu}\right)$$

Theil index is suited to our measure of toilet facility which is in percentage terms. One of the main reason of choosing Theil inequality index is that it is additive and can be decomposed to calculate within groups inequality as well as between groups inequality (Atkinson, 1970). Any index for a particular block implies the contribution of that block to the between block inequality measure of T statistic. Negative index for any group *j* will imply that its average is below the district average. The combined index always lies between zero and one. In a society where everyone had the same level of sanitation facility there would be perfect equality with score zero whilst in a society where one entity received all the services and the others none, a state of complete inequality with score one would exist.

An attempt has been made to identify the determinants of access to latrine facilities in rural Birbhum and, for this purpose; we have employed multiple regression models. The dependent variables include 'percentage of household with latrine facility', 'percentage of households with flush toilet facility' and 'percentage of household with other latrine (combining pit and service latrine) facility' in a village. The independent variables represent demographic profile, level of education, occupation, caste, condition of housing, access to basic amenities including water supply and lighting and access to banking facility of the villages. We hypothesize a positive relationship between literate rate and households' access to toilet facility as higher literacy rate reflect more consciousness about the importance of this service. The owning status and condition of housing reflect the households' affordability and standard of living. Greater is the proportion of households with self-owned houses, higher would be the proportion of households with toilet facility. The households with dilapidated housing condition are less likely to have access to toilet facility. Higher the number of married couples in a household, more is the need for toilet facility and so, we hypothesize a positive relationship between proportion of household with five or married couple and proportion of households having access to toilet facility. A higher percentage of marginal workers and people belonging to SC and ST categories suggest greater concentration of poor households in the villages. Poor people are not as capable as the better off people to place their demand for toilet services. Further, local customs and norms prevailing among the marginalised section of the population may demotivate them not to use toilet facility and this may lead to open defecation. So the relationship between the proportion of marginal

workers, proportion of SC people and ST people and availability of toilet services in a village is hypothesized to be negative. Households' access to tap-water (from treated source) as the main source of drinking water, households' possession of kitchen facility, households with electricity as main source of light are representative of economic condition of the households of the villages. We have also utilized households' access to banking facilities to capture the standard of living of the household. The higher the proportion of households with better the economic condition and standard of living, greater would be the prosperity of the villages and so, higher would be the proportion of households with access to toilet facilities in villages. Percentage of households' without any of the assets like radio, television, computer, phone, bi-cycle, scooter and car is taken as a proxy for income of the households which is expected to have a negative relationship with the proportion of household having access to toilet facility. Given the decentralized nature of management of toilet facilities, the administrative capacity of the blocks has implications for provision of the service under consideration. This is captured by the block dummies and Illambazar is taken as the reference block as it is the block with highest percentage of households having access to toilet facilities.

Here, with these sixteen explanatory variables several other regressions are also ran where the dependant variables are different types of toilet facilities, namely, flush latrine and other toilets (combining pit and service toilet).

Model-I : Percentage household with toilet facility within the premises = $a + b_1$*OS_Owned + b_2*OS_ Rented + b_3*STRUCTURE_CH_Permanent+ b_4* HH_DILAPDATED + b_5* KITCHEN_NO + b_6*MC_5+ b_7*P_SC+ b_8* P_ST+ b_9*LIT + b_{10}* MARGWORK_P + b_{11}*MSDW_ Tap_Treated+ b_{12}*LDWS_Away+ b_{13}*MSL_Electricity+ b_{14}*BANKING + b_{15}*FUEL_Bad + b_{16}*NO_ASSET + b_{17}*Blocks. Here we are controlling the blocks to compare the other blocks with respect to the best performer, Illambazar.

Model-II : Percentage household with flush latrine facility within the premises = $a + b_1$*OS_Owned + b_2*OS_ Rented + b_3*STRUCTURE_CH_Permanent + b_4* HH_DILAPDATED + b_5* KITCHEN_NO + b_6* MC_5+ b_7* P_SC + b_8* P_ST + b_9* LIT + b_{10}* MARGWORK_P + b_{11}* MSDW_ Tap_Treated + b_{12}* LDWS_Away + b_{13}* MSL_Electricity + b_{14}*BANKING + b_{15}*FUEL_Bad + b_{16}*NO_ASSET

Table-2.1: Independent Variables

Variables	Description
OS_Owned	Percentage of households with self-owned houses
OS_Rented	Percentage of households with rented houses
STRUCTURE_CH_Permanent	Percentage of households with permanent structure of houses
HH_DILAPIDATED	Percentage of households with dilapidated houses
KITCHEN_NO	Percentage of households without kitchen
MC_5	Percentage of household with married couple more than four
P_SC	Percentage of SC population
P_ST	Percentage of ST population
P_LIT	Literacy rate
MARGWORK_P	Percentage of Marginal Workers
MSDW_Tap_Treated	Percentage of households in which tap water from treated source is used as the main source of drinking water
LDWS_Away	Percentage of households with location of drinking water is away from the premises
MSL_Electricity	Percentage of households with electricity as the main source of lighting
BANKING	Percentage of households with banking facility
FUEL_Bad	Percentage of households using fuel other than LPG (such as fire-wood, crop-residual, cowdung cake, coal-lignite-charcoal, kerosene)
NO_ASSET	Percentage of households without any of the specified asset (Radio/Transistor, Television, Computer/Laptop, Telephone/ Mobile, Bicycle, Scooter/Motor-Cycle/Moped, Car/Jeep/Van)

Source : Census of India 2011.

Model-III : Percentage household with other latrine (pit and service together) facility within the premises = a + b_1*OS_Owned + b_2*OS_ Rented + b_3*STRUCTURE_CH_Permanent + b_4* HH_DILAPDATED + b_5* KITCHEN_NO + b_6* MC_5 + b_7* P_SC + b_8* P_ST + b_9* LIT + b_{10}* MARGWORK_P + b_{11}* MSDW_ Tap_Treated + b_{12}* LDWS_Away + b_{13}* MSL_Electricity + b_{14}*BANK-ING + b_{15}*FUEL_Bad + b_{16}*NO_ ASSET.

The command "hettest" in Stata[4] has been utilised to test heteroscedasticity and the result rejects the null hypothesis of constant variance at 1 per cent level of significance. To avoid this problem of heteroscedasticity, we have clustered it at the village level so that the variation caused by the particularity of villages got eliminated. There is no multi-collinearity as reflected from the *VIF* scores (less than 4 for all variables).

Further, we have categorised the income into quartiles by taking the variable NO_ASSET which shows the percentage of household with non-availability of any of the asset. The distribution of the variable across quartiles is given in the Table-2.2. Naturally, the reverse gives the distribution of income, e.g. the highest quartile (most affluent class) consists of the household with the value of the variable less than 16.7. Subsequently, four separate regression models have been employed for the four groups of quartiles with proportion of households with access to toilet facility as the dependent variables and sixteen variables as listed in Table-2.1 as the independent variables. These models would provide insights into the main influencing factor of households' access to toilet facility across different income levels.

Results and Discussion

There have been improvements in the availability of toilet facility in rural areas across the district and different blocks during 2001-2011. The percentage of households having toilet facility has gone up from 11.74 to 24.1 per cent over the period under consideration. Nonetheless, it clearly indicates inequality as a sizable proportion of population in the district live in totally dehumanised condition as they lack access to toilet facility. It is important to note here that for services like toilet facility, lower proportion of household coverage does not necessarily imply non-availability or inadequacy of that amenity as it can partially be attributed to local socio-cultural norms which influence households' access and use of toilet facility.

Table-2.2 : Values of Quartiles of NO_ASSET

Quartile	Value
25	16.7
50	27.9
75	42.2
100	100

Source : Authors' calculation from Census Data, Government of India, 2011.

Variations have also been observed among the blocks in terms of the proportion of households having access to toilet facility (Table-3.1). In conformity with the district trend, all the blocks experienced improvement in the percentages of the household covered by the latrine facility during 2001-2011. In 2001, Suri-I has the highest percentage of household with toilet facility within the premises although the coverage is poor as only one (approximately) in five households contains toilet. Illambazar has taken this position in 2011 with one in three households containing a toilet. In contrast, the household coverage is lowest in Koyrasol both in 2001 and 2011. However, improvements in the availability of toilet facility during 2001-2011 show a systematic pattern. Both in 2001 and 2011, Suri-I, Illambazar, Nanoor and Bolpur-Sriniketan have better household coverage than the district average. On the other hand, blocks like Murarai-II, Nalhati-II, Mohammad Bazar, Rajnagarand Dubrajpur performed badly as compared to the average district coverage and, so, are dragging down the average performance of Birbhum. Importantly, for Illambazar the improvement in the percentage of households having toilet facility is substantial (from around 11 percent in 2001 to 33 per cent in 2011). These variations indicate inequality in households' access to toilet facility within the blocks.

Table-3.1 : Availability of Toilet within the Household in Different Blocks of Rural Birbhum over the Years

Block	2001	2011
Murarai-I	13.42	17.3
Murarai-II	9.17	15.2
Nalhati-I	13.04	13.6
Nalhati-II	8.74	14.8
Rampurhat-I	10.31	19.6
Rampurhat-II	11.04	16
Mayureswar-I	11.40	20.1
Mayureswar-II	10.01	18.6
Mohammad Bazar	9.98	15.9
Rajnagar	7.45	14.5

(Contd...)

Suri-I	19.35	29.3
Suri-II	11.05	18.6
Sainthia	11.02	18.8
Labpur	12.06	20.1
Nanoor	17.95	29
BolpurSriniketan	16.86	28.6
Illambazar	10.59	33.6
Dubrajpur	7.50	14.7
Khoyrasol	7.28	13.5
Birbhum	11.74	24.1

Source : Census Data, Government of India, 2001 and 2011.

We have also calculated the Theil's index for measuring the inter-block inequality in Birbhum for 2001 and 2011 (Table-3.2). Inequality in toilet facility in both the time points is less (close to zero) but the fact that the value of index has increased from 0.016983 in 2001 to 0.019467 in 2011 must be viewed with concern.

Table-3.2 : Inter-Block Inequality in Birbhum

2001	2011
0.016983	0.019467

Source : Authors' calculation from Census Data, Government of India, 2001 and 2011

To see the contribution of each block into the index in 2011, we have further calculated the Theil's index for each block in Table-3.3. Six blocks, namely, Murarai-I, Murarai-II, Rampurhat-II, Mayureswar-I, Rajnagar and Suri-I have negative Theil index which implies that percentage of household with latrine is less than the percentage of household without toilet in these blocks. Among other Blocks, Bolpur-Sriniketan and Illambazar has very low level inequality with index value of 0.007747 and 0.007191 respectively. The contribution of Khoyrasol to the inter-Block inequality is highest with Theil index value of 0.325548, followed by Nalhati II (0.320669), Dubrajpur (0.220342) and Mayreswar II (0.218174). Rest of the Blocks are with moderate inequality within themselves.

Combining Table-3.2 and Table-3.3, one would therefore infer that inequality is higher in the blocks with lower proportion of households having access to toilet facilities. In particular, the

Table-3.3 : Intra-Block Inequality in Different Blocks of Birbhum in 2011

Block	Theil's T Index
Murarai-I	-0.08268
Murarai-II	-0.0359
Nalhati-I	0.049198
Nalhati-II	0.320669
Rampurhat-I	0.081648
Rampurhat-II	-0.00484
Mayureswar-I	-0.01
Mayureswar-II	0.218174
Mohammad Bazar	0.09783
Rajnagar	-0.05131
Suri-I	-0.01118
Suri-II	0.167184
Sainthia	0.0566
Labpur	0.047677
Nanoor	0.014976
Bolpur Sriniketan	0.007747
Illambazar	0.007191
Dubrajpur	0.220342
Khoyrasol	0.325548

Source : Authors' calculation from Census Data, Government of India, 2011.

block (Khoyrasol) with lowest percentage of toilet has highest inequality and the block (Illambazar) with highest percentage of toilet has the lowest inequality. The correlation coefficient taking all these blocks together is calculated to be -0.3646. This implies that inequality and average toilet facility is inversely related. In other words, the blocks with high level of service deficiency and inequality should be the major concern of government policy makers in the context of provision of toilet facility.

Regression Analysis : Determinants of Disparities in Households' Access to Latrine Facility

Table-4.1 shows the results of the regression models. As mentioned earlier, Model-I considers all types of toilet facility. Results indicate that the literacy rate related variable positively and significantly influences households' access to toilet facility in a village, suggesting the importance of education as an important factor in influencing the awareness and attendant demand for toilet facility. The marginal effect of the variable related to number of married couple is positive and statistically significant. Proportion of ST people and proportion of marginal workers induce negative impact as the villages with higher corresponding percentages, being economically laggard, have lower proportion of households with access to toilet facility. However, the proportion of households with toilet facility increases with proportion of SC population in the villages. Implementation of Nirmal Bangla program in different villages might explain the greater coverage of SC households with toilet facility[5]. All the other variables reflecting on the economic condition and standard of living of the households living in a village entail positive marginal impact. The higher the (a) proportion of households with access to tap-water (from treated source) as the main source of drinking water, (b) percentage of household with electricity as the main source of light, (c) percentage of household with permanent structure of census houses and (d) percentage of household with access to banking facility in a village, more is the economic prosperity of village leading to higher proportion of households with access to toilet facility. On the other hand, higher the (a) proportion of household with access to drinking water away from source, (b) proportion of household without kitchen facility and (c) proportion of household using traditional sources of fuel (other than LPG or biogas), less is the economic prosperity of the villages leading to lower proportion of households coverage in them. Further, the marginal effect of the variables related to proportion of household without any assets (like radio, television, computer, phone, bi-cycle, scooter and car) turned out to be negative and statistically significant. Considering the block dummies, in reference to the Illambazar block, all the coefficients of the other Blocks are negative and statistically significant excepting Nanoor block. In terms of absolute difference in the coefficient values, Khoyrasol turned out to be worst performers closely followed by Dubrajpur, Rajnagar Mohammed Bazar, Nalhati-I, Suri-II and Murarai-I.

The second model assesses the impact of same set of explanatory variables on 'percentage of households' access to flush toilet'. Here the results are same as obtained for Model-I. Model-III summarizes the impact on 'percentage of households' access to other toilets such as pit and service latrine'. Out of sixteen explanatory variables, only six of them turned out to be statistically significant with same hypothesized direction of influence. The variable related to the proportion of households with five or more married couple has negative coefficient indicating such households' preference for flush toilet facility.

On the whole, we are able to observe that socio-economically advanced and or developed blocks in terms of our chosen explanatory variables has higher proportion of household covered by the latrine facility. This kind of deprivation of toilet facilities in backward areas of rural India and especially among the poor and marginalized groups is also observed by Kumar (2017) and Katrak (2014).

Table-4.1 : OLS Estimation of the Determinants of Variation in Accessibility of Toilet within the Household

Dependent Variable :
Model-I : Household Having Toilet Facility in the House (All types of latrine together)
Model-II : Household Having Flush/Pour Flush Toilet Facility in the House
Model-III : Household Having Pit and Service Toilet Facility in the House

Explanatory Variables	Model-I	Model-II	Model-III
OS_Owned	-0.0273 (0.0334)	-0.0716** (0.0314)	0.0106 (0.0142)
OS_Rented	0.513*** (0.153)	0.534*** (0.133)	-0.0345 (0.0443)
STRUCTIRE_CH_ Permanent	0.324*** (0.0361)	0.222*** (0.0301)	0.0224 (0.0144)
HH_DILAPIDATED	-0.0303** (0.0126)	-0.0238** (0.0117)	0.0000821 (0.00877)
KITCHEN_NO	-0.101*** (0.0387)	-0.103*** (0.0393)	-0.0543** (0.0276)
MC_5	2.303* (1.321)	3.280** (1.427)	-0.516* (0.292)

(Contd...)

P_SC	0.00103* -0.000559	0.000717 -0.000551	-0.000877** -0.000361
P_ST	-0.00322*** (0.000749)	-0.00143** (0.000671)	-0.00138*** (0.000452)
P_LIT	0.00275*** (0.000523)	0.00224*** (0.000419)	0.00126*** (0.000256)
MARGWORK_P	-0.00558*** (0.00149)	-0.00472*** (0.00141)	-0.0013 (0.000854)
MSDW_Tap_Treated	0.0676*** (0.0165)	0.0713*** (0.0176)	0.0108 (0.00868)
LDWS_Away	-0.00577 (0.00799)	-0.0213*** (0.00782)	-0.00247 (0.00449)
MSL_Electricity	0.0962*** (0.0176)	0.110*** (0.016)	0.0178** (0.00793)
BANKING	0.0227*** -0.00838	0.0347*** -0.0075	0.00283 -0.00474
FUEL_Bad	-0.122*** (0.0209)	-0.122*** (0.0224)	-0.0138 (0.0177)
NO_ASSET	-0.0500*** (0.0139)	-0.0227* (0.0121)	0.00324 (0.00783)
Blocks			
Murarai-I	-11.82*** (1.589)		
Murarai-II	-8.692*** (1.71)		
Nalhati-I	-15.60*** (1.691)		
Nalhati-II	-8.145*** (2.497)		
Rampurhat-I	-7.596*** (1.658)		
Rampurhat II	-8.774*** (1.717)		

(Contd...)

Mayureswar-I	-8.440*** (1.852)		
Mayureswar-II	-8.985*** (1.625)		
Mohammad Bazar	-12.94*** (1.659)		
Rajnagar	-14.52*** (1.717)		
Suri-I	-13.12*** (1.816)		
Suri-II	-11.39*** (1.795)		
Sainthia	-9.360*** (1.568)		
Labpur	-7.681*** (1.723)		
Nanoor	-1.564 (1.774)		
Bolpur – Sriniketan	-5.203*** (1.731)		
Dubrajpur	-14.89*** (1.655)		
Khoyarasol	-19.79*** (1.916)		
Constant	29.24*** (4.168)	20.57*** (3.759)	2.459 (1.934)
Sample size	2247	2247	2247
R squared	0.483	0.3723	0.0302
F statistic	40.34	39.41	4.58
p > F	0.0000	0.0000	0.0000

Notes : i) Figures in first brackets are standard errors.

ii) *, ** and *** imply significance at 1, 5 and 10 per cent levels respectively.

iii) Illambazar is taken as the reference Block.

We have further attempted to categorize the villages in terms of their level of economic prosperity using the proportion of households without any assets (like radio, television, computer, phone, bi-cycle, scooter and car) as proxy for measuring prosperity. As the percentages relates to unavailability of the assets, it would capture the prosperity status of the villages in a reverse manner, e.g. the first quartile of the variable corresponds to the most prosperous villages and so on. Table-4.2 reports the impact of the sixteen explanatory variables, as mentioned in Table-2.1, on the availability of toilet facility in the villages with different levels of economic prosperity.

For the first quartile, i.e., for the most prosperous group of villages, ownership status of the house, structure and condition of the houses, literacy rate, access to tap water from treated source, use of

Table-4.2 : OLS Estimation of the Determinants of Variation in Accessibility of Toilet within the Household across Income-Quartiles

Dependent Variable : Household Having Toilet Facility in the House				
Explanatory Variables	**First**	**Second**	**Third**	**Fourth**
OS_Owned	-0.0169 (0.0316)	-0.187* (0.0974)	-0.0598 (0.0841)	-0.0552 (0.0797)
OS_Rented	1.889** (0.793)	0.0727 (0.172)	1.194*** (0.303)	0.430*** (0.16)
STRUCTURE_CH_Permanent	0.242*** (0.0431)	0.235*** (0.0458)	0.153*** (0.0396)	0.237*** (0.0629)
HH_DILAPIDATED	-0.0342** (0.0171)	-0.0143 (0.0294)	0.0118 (0.0311)	-0.0967** (0.0455)
KITCHEN_NO	-0.0835*** (0.0318)	-0.222* (0.124)	-0.422** (0.2)	0.613 (0.995)
MC_5	-0.4 (2.665)	0.471 (1.84)	2.612 (2.291)	3.849** (1.63)
P_SC	0.00029 (0.000638)	-0.00000232 (0.00105)	0.000171 (0.00163)	-0.00502 (0.00317)
P_ST	-0.00208 (0.00175)	-0.00276* (0.00143)	-0.00341*** (0.0012)	-0.00940*** (0.00272)

(Contd...)

P_LIT	0.00119** (0.000472)	0.00304*** (0.000665)	0.00571*** (0.00119)	0.0107*** (0.00198)
MARGWORK_P	-0.000231 (0.00172)	-0.0031 (0.0028)	-0.0102*** (0.00314)	-0.0113 (0.0072)
MSDW_Tap_Treated	0.0936** (0.0475)	0.0055 (0.021)	0.116*** (0.0359)	0.0744** (0.0346)
LDWS_Away	-0.0204 (0.0129)	-0.014 (0.0146)	-0.0384** (0.0173)	-0.0272 (0.0206)
MSL_Electricity	0.0833*** (0.0303)	0.154*** (0.0273)	0.124*** (0.0287)	0.108*** (0.0352)
BANKING	0.0386** (0.0169)	0.015 (0.013)	0.0284* (0.0147)	0.0626*** (0.0197)
FUEL_Bad	-0.0286 (0.025)	-0.122*** (0.0421)	-0.168*** (0.0388)	-0.187*** (0.06)
Constant	9.175** (3.847)	33.28*** (9.984)	26.62*** (8.285)	25.74*** (9.561)
Number of observation	558	565	559	565
F statistic	24.53	20.14	19.26	32.15
Pseudo R squared	0.2535	0.3269	0.3958	0.4402

Notes : i) Figures in first brackets are standard errors.
ii) *, **and *** imply significance at 1, 5 and 10 percent levels respectively.

electricity and access to banking facility have emerged as the significant variables in explaining the variations in the availability of toilet facility in villages. Among them, the impact of variable related to 'rented' ownership is largest as reflected by its coefficient value. This might be attributed to the fact that many rural households in the district prefer not to have latrine facility within residential premises. It may relatively be easier for the inhabitants of rented houses to ignore such traditional values. Caste related variables turned out to be statistically insignificant for prosperous group of villages. We have observed more or less same marginal impacts of the explanatory variables under consideration for the other three groups of villages with declining level of prosperity. For these groups of villages, proportion of ST population has significant negative impact indicating greater level of service deprivation. Overall, it is evident

that households access to basic services and amenities, type and quality of housing and level of education reflective of socio-economic well-being couples with traditional norms and practices largely determines the variations in access to latrine facility in the villages of Birbhum.

Conclusion

This paper examines the availability and disparities in access to toilet facilities in rural Birbhum and subsequently makes an attempt to identify the determinants of such disparities primarily on the basis of demographic information, housing condition, access to basic amenities and possession of certain types of assets. We have observed that although there has been improvement in the households' coverage in terms of access to toilet facility within the premises during 2001-2011, still quite a significant proportion of rural households in Birbhum lack access to toilet facility. We have also noted noticeable intra and inter-block variation in the percentage of households covered by toilet facility. Our regression results also reflect that household coverage in terms of toilet facility is higher in socio economically advanced and/or developed blocks where level of development is captured through households' demographic profile and their access to basic services and amenities, type and quality of housing and level of education. Our finding is also indicative of the importance of traditional social norms in influencing households' access to toilet facility.

In essence, significant lack of access to toilet facility in Birbhum requires immediate policy intervention especially in the backward blocks. Also adequate attention should be paid to the marginalised section of the population during the implementation and formulation of the existing and/or new schemes. Already financial allocation and economic incentives have been provided to the households for construction of toilet through implementation of schemes like Mission Nirmal Bangla. Yet this arrangement has failed to achieve the objectives of improving households' coverage of toilet facility. Therefore, emphasis should be placed on intensive campaigning to generate awareness regarding the importance and benefits of constructing latrines. It is well acknowledged that behavioural changes, aided by information, education and communication, would play an equally important role in motivating people to use proper latrine facility and demand for it. Moreover, given resource inadequacy, construction of public or community toilets can also be viewed as an alternative strategy and this, in turn, can influence the rural households' preference against open defecation.

Endnotes

1. Among the 18 districts, Birbhum ranked 14 in terms of Human Development Index (West Bengal Human Development Report, 2004).

2. Two assumptions have been made while constructing the index : i) villages are homogeneous as this is the unit of observation, ii) villages with zero toilet facility are taken as 0.1 as logarithm of zero does not exist.

3. Decomposition has not been made for the year 2001 due to non-availability of village-level data.

4. Breusch-Pagan/Cook-Weisberg test is used.

5. In April 2014, the Government of West Bengal launched Mission Nirmal Bangla, a comprehensive rural sanitation program, to make rural West Bengal Open Defecation Free (ODF). Birbhum district has been declared as the ODF in March 2018.

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Testing of Efficient Market Hypothesis in Indian Emerging Market with Reference to the Public Sector Enterprises

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This paper is an attempt to study the strong, semi-strong and weak forms of the Efficient Market Hypothesis (EMH) in the Indian Public Sector Enterprises (PSEs). Explicitly, this paper will examine whether the patterns are current in market returns of stakeholders, or outperform the market by transaction on the foundation of historic information. Two different transaction approaches are tested on weekly data for 62 PSEs, spanning the period 2006 to 2016. The outcome of the paper recommend that there is some indication of probability in share returns and that the provision for efficient market hypothesis is resilient than in earlier research studies. This enhanced efficiency market hypothesis of the public sector enterprises listed in Indian stock market may be accredited to technical and monitoring expansions introduced by the Indian government. The empirical results suggest that there is no positive relation in the existing stock of emerging market value between the individual stocks' returns of the public enterprises. The market values indicate that the betas and non-beta risks also affect the expected returns.

Keywords : Hypothesis, Efficient Markets, Stakeholders and Enterprises.

Introduction

Of late, the mainstream efficient market has become an alternative and technologically advanced market, in order to estimate the role of the public sector. It has already been the prominent sector in the stock markets in the USA and many European countries. It is interesting to emphasise here that no study has been done so far on this aspect in the field of Public Sector Enterprises (PSEs) especially in India. It is also proved that no study has been done especially on the strong, semi-strong and weak forms of the efficient market hypothesis in the markets in developing countries. The efficient market hypothesis advises that stock markets are "statistics efficient", i.e., any innovative information, pertinent to the market, is extemporaneously replicated in the stock prices, so that not one person can use such information to reliably earn unusually high returns.

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This research study will seek to bring out that the Indian market of PSEs is strong and efficient to the extent that mutual fund managers could not outperform arbitrarily fabricated portfolios of index stocks for the period 2006-2016. This suggests that a stockholder can build his/her own portfolio without any skilled guidance and still earn returns equivalent to work-wise managed funds. Efficient Market Hypothesis (EMH) highlights that public enterprise financial markets are "information ally efficient" which suggests that the present prices fully replicate all available information.

The objective of this paper is to test the strong, semi-strong and weak forms of market efficiency of the PSEs which plays an important role in determining the health of public enterprises. These three forms are evidently used in EMH by using the descriptive statistics, unit root test, Kolmogorov-Smirnov goodness of fit test, run test and auto-correlation test. The result concludes that, in general, the stock price movement of public enterprises of market value price of companies do not follow random walk. The results of the runs test reveals that share prices of seven companies do not follow random walk. Unit root test of ADF tests disclose that share prices display low to moderate correlation varying from negative to positive values. As the research paper displays diverse outcomes, it is problematic to accomplish the strong, semi-strong and weak forms of efficiency of National Stock Exchange (NSE). Since it is an emerging research area in the field of public enterprises, this study provide the current trends in the public enterprises which would certainly be helpful for the policy makers, investors, portfolio managers and researchers.

Select Review of Literature

The EMH maintains that market prices fully reflect all the available information. Developed independently by Paul A. Samuelson and Eugene F. Fama in the 1960s, this idea has been applied extensively to theoretical models and empirical studies of financial securities prices, generating considerable controversy as well as fundamental insights into the price-discovery process. The most enduring critique comes from psychologists and behavioural economists who argue that the EMH is based on counterfactual assumptions regarding human behaviour based on rationality. Recent advances in evolutionary psychology and the cognitive neurosciences may be able to reconcile the EMH with behavioural anomalies.

Saqib and Mohammad (2012) examined the weak form of efficient market hypothesis on the four major stock

markets in India, Pakistan, Bangladesh and Sri Lanka. Historical index values on a monthly, weekly and daily basis for a period of 14 years were analysed to determine the significance of the market value of individual portfolio. Aga and Kocaman (2008) examined the EMH in the Istanbul Stock Exchange market. The study used a computer index called return index-20 and also used a times series model to test the weak form of the efficient market hypothesis for the period spanning between 1986 and 2005. The result obtained from the times analysis revealed that there is evidence of a weak-form of EMH in the Istanbul Stock Exchange market.

Hamid (1978) stated that the EMH has become an accepted fact within the financial literature. The definition of the information set is the reason for different versions of the EMH : weak, semi-strong and strong. These were first mentioned by Roberts (1967) and have been tested and reviewed widely by various academics since (Jensen 1978, Dimson & Mussavian 1998, Fama 1998, Sewell 2011). The typology is defined as follows (Fama 1970, LeRoy 1989, Spremann 2008) : The information set in the weak form includes all historical stock prices at the time of the appraisal, where public or private information is excluded. As this is given for all markets, this form is not under consideration within the literature. The semi-strong set contains, besides the historical prices, all publicly available information (e.g., annual reports). Private information is excluded from this set. A strong form of efficiency exists if the set comprises historical prices, public information and private knowledge (e.g., inside information).

Cavusoglu (2007) examined the weak form of the EMH for the Athens Stock Exchange through conditional accounting approaches. The study also examined the influence of changes in economic conditions on stock returns and on conditional volatility. The study covered the period from 1999 to 2007. Jae H. Kim (2004) tested the martingale (or random walk) hypothesis in the stock prices of a group of Asian countries. The selected countries represent well-developed markets– Hong Kong and Japan – as well as emerging markets, Korea, Taiwan and Thailand. They found that the stock prices of Japan, Korea, and Hong Kong were following the martingale, indicating that their stock markets have been efficient.

Vaidyanathan and Gali (1994) attempted to test the weak form of efficiency in the Indian capital market. The test was based on the daily closing prices of ten shares actively traded on the Bombay Stock Exchange over four different

period of time, using Runs Test, Serial Correlation Tests and Filter Rule Tests. The evidence from all the three tests support the weak form of efficiency.

Abeyratna and Power (1995) sought to distinguish three levels of market efficiency by considering three different types of information sets : (1) The weak form of the EMH, which asserts that prices fully reflect the information contained in the historical sequence of prices; (2) The semi-strong form of EMH, which asserts that current stock prices reflect not only historical price information, but also all publicly available information relevant to a company's securities. If markets are efficient in this sense, an analysis of balance sheets, income statements, announcements of dividend changes or stock splits or any other public information about a company (the technique of fundamental analysis) will not yield abnormal economic profits; and (3) The strong form of EMH which asserts that all information that is known to any market participant about a company is fully reflected in market prices. Hence, not even those with privileged information can make use of it to secure superior investment results.

Significance of the Study

The present paper will endeavour to create such awareness to the stakeholders regarding the effect of available information on the current price and the capability of the market which would help them to know about the ups and down prices of efficiency market hypothesis. This study has done a select literature review on market efficiency hypothesis in the Indian stock market portfolio with the help of public sector enterprises. This study will also help the market researchers to know more about the indices, such as efficiency, depth, size, risk and return, liquidity and regulations in PSEs, which are predominantly associated issues. Since the stock markets of India is a vibrant component of the current economies in India, this paper can be significant to determine the efficiency level of emerging market trends in the public enterprises which will certainly play a vital role in detecting price fluctuation in efficiency market hypothesis.

Objective of the Study

1. To test the strong, semi-strong and weak forms of efficiency of individual stocks listed on NSE,
2. To examine the randomness of individual stock prices of public enterprises, and
3. To review the empirical evidences of Efficient Market Hypothesis and to develop an investment strategy in public sector enterprises.

Hypothesis of the Study

1. The individual stock prices are efficient in strong, semi-strong and weak forms of efficient market hypothesis.
2. The individual stock prices are not efficient in strong, semi-strong and weak forms of efficient market hypothesis.
3. The individual stock prices of efficient market hypothesis follow a random walk.
4. The individual stock prices of efficient market hypothesis do not follow a random walk.

Research Methodology

The paper has adopted daily prices of the PSEs listed in the NSE All Share Index. The period of study is from 2006 to 2016. The sample size consisted of 62 PSEs listed on the NSE for which data was available. The paper has analysed and tested the strong, semi-strong and weak forms of efficiency for the individual stock movements. The strong, semi-strong and weak forms of EMH were tested using the run test, ADF test, VAR model, Kolmogrov-Smirnov goodness of fit-test and auto-correlation test. These research studies are concerned with apprehending, measuring and interpreting the impact of a significant event on the value of a selected PSEs particularly listed companies from the selected sectors. Usually external events that have an understandable potential to impact the value of a firm originate from the fiscal and regulatory actions of the government or from the actions of competitors. This present research study will aim at providing empirical evidence on the weak, semi and strong forms of efficient market hypothesis in India.

For the construction of this paper, the secondary sources such as reports of public enterprises' and NSE Statistical Bulletins from 2006 to 2016 were extensively used. This study also collected data from the business dailies, monthly, quarterly, and annually time series data of all Indian share market indexes from 2006 to 2016.

Data Analysis and Interpretation

The result of Table-1 shows the nature of descriptive statistics. From the kurtosis of the data set, it was observed that the majority of the nominated indices in the given time range were normally distributed. The distributions were negatively skewed. Jarque-Berais a test statistic that measures the difference in skewness and kurtosis of a series with those from the normal distribution. The reported probability (p-value) is

Table-1 : Descriptive Statistics

Descriptive Statistics	1	2	3	4	5	6	7	8	9	10
Mean	0.035	0.086	0.532	0.285	0.369	0.502	0.087	0.006	0.751	-0.682
Median	0.538	0.521	0.369	0.258	0.147	0.753	0.853	0.362	0.539	0.486
Maximum	0.086	0.530	0.236	0.186	0.539	0.438	0.672	0.391	0.792	0.637
Minimum	-0.530	-0.538	-0.538	-0.864	-0.673	-0.867	-0.327	-0.867	0.439	0.086
Std. Dev.	0.493	0.238	0.356	0.538	0.167	0.375	0.369	0.485	0.867	0.238
Kewness	0.532	-0.563	0.813	0.843	-0.682	0.439	0.602	0.530	0.412	0.301
Kurtosis	9.482	5.206	3.861	7.879	5.630	5.769	1.456	2.538	10.503	6.830
Jarque-Bera	0.458	0.423	0.869	0.127	0.362	0.598	0.692	0.483	0.627	0.519
Prob	0.008	0.503	0.000	0.008	0.003	0.000	0.702	0.073	0.283	0.410
Sum	1.080	0.480	-2.086	-0.892	-3.450	0.703	0.458	-2.586	-0.521	0.458
Sum Sq. Dev.	0.486	0.237	0.369	0.258	0.741	-0.735	-0.268	-0.425	0.863	0.459
Obser	1321	2034	1968	2730	2167	2568	1837	1653	2468	2153

Source : SPSS output 17 version and 2017, 1. Banking & Financial Services, 2. Electricity, Power & Energy 3. Cement, 4. Cloths & Yarns, 5. Drugs & Pharmaceuticals, 6. FMCG, 7. Petroleum products, 9. Automobiles & Internal Combustion Engines, 10. IT.

**significant at 5% level.*

the probability that a Jarque-Bera statistic exceeds,when compared to the observed value under the alternative hypothesis.

Kolmogorov Smirnov Test

The Kolmogorov Smirnov Goodness of fit test (KS) displays a 0.0000 probability for the Z at the 5 per cent level of significance, in normal circumstances, as well as uniform distribution. The outcome clearly indicates that the frequency distribution of the daily and monthly values of the selected 62 PSEs do not fit either normal or uniform distribution. Therefore, null hypothesis of normal distribution of the prices is rejected. The K-S results for 62 PSEs are shown in the accompanying Table.

Table-2 presents the results of Kolmogorov-Smirnov goodness of fit test (K-S test). It makes available indication whether or not the circulation confirms to a normal distribution. Results for 59 out of 62 companies are available. The K-S test result shows 0.000 significance at 0.05 level for 47 out of 62 stocks of the selected public enterprises companies. This specifies that the frequency distribution of the daily and monthly prices of the shares does not fit normal distribution, thereby rejecting the null hypothesis and the paper draws the conclusion that the share price movements do not follow the random walk model according to the K-S tests (some public companies). The results for 15 companies are not inwards, due to non-availability of proper e-data.

Empirical Analysis and Market Efficiency Hypothesis of PSEs in India

Unit root for expected stock return stationarity test for market efficiency hypothesis

The paper testing the efficiency hypothesis in the weak-form improves over time in the Indian Stock Market indices. Its needs the time series to contain a unit root. Table-2 displays the results that there is no unit root among the time series properties of the expected stock annual returns from 2006 to 2016. It is related to the ADF-test at various order difference of the selected portfolio under listed companies of NSE. This authorizes stationarity in the share market index value and NIFTY of top companies shares from the 2006 to 2016 as the ADF values are greater than the critical value at 5 per cent significance level but there is unit root among the time series properties in the average year of 2010 and 2011 because the ADF results are less than 5 per cent critical level irrespective of sign difference. In the average stock of the year 2010 and 2011, it is observed that expected stock returns are not stationary.

Table-2 : Results of K-S Test

Public Sector Enterprises	z-value	p-value	Public Sector Enterprises	z-value	p-value
Air India Ltd	1.53	0.00	Bhartiya Rail Corporation Ltd	065	0.20
Air India Charters Ltd	2.58	0.00	Biecco Lawrie Ltd	2.25	0.00
Air India Engineering Service Ltd	3.42	0.12	Bihar Drugs & Organic Ltd	2.41	0.03
Airline Allied Services Ltd	0.25	0.00	Birds Jute & Export Ltd	3.08	0.00
Airports Authority Ltd	3.62	0.00	Maithon Transmission Ltd	0.47	0.01
Akaltara Power Ltd	3.42	0.00	Brahmaputra Cracker Ltd	2.56	0.01
Andaman & Nicobar Ltd	2.87	0.00	Fertilizer Corporation Ltd	1.58	0.02
Andrew Company Ltd	4.95	0.20	Braithwaite & Company Ltd	6.58	0.00
Antrix Corporation Ltd	1.79	0.00	Construction Company Ltd	6.27	0.20
Artificial Limbs Ltd	0.89	0.03	Bridge and Roof Company Ltd	4.91	0.00
Assam Ashok Hotel Ltd	0.47	0.00	British India Corporation Ltd	2.67	0.00
Balmer & Lawrie Ltd	0.47	0.01	Broadcast Engineering Ltd	065	0.00
Lawrie & Company Ltd	065	0.01	Burn Standard Company Ltd	2.25	0.12
BEL Ltd	2.25	0.02	Cement Corporation of IndiaLtd	1.25	0.00
Bengal Pharmaceuticals Ltd	2.41	0.00	Central Coalfields Ltd	3.20	0.00
Bharat Bhari Udyog Ltd	3.08	0.00	Central Cottage Industries Ltd	1.96	0.00
Bharat Coking Coal Ltd	0.47	0.05	Central Electronics Ltd	3.78	0.00
Bharat Dynamics Ltd	2.56	0.01	Central Inland Water Ltd	1.52	0.20
Bharat Earth Movers Ltd	1.58	0.02	Central Mine Planning Ltd	2.47	0.00
Bharat Electronics Ltd	6.58	0.21	Central Railside Ltd	2.89	0.03
Bharat Heavy Electricals Ltd	6.27	0.20	Central Warehousing Ltd	0.45	0.00
Bharat Heavy Plate &Vessel Ltd	4.91	0.00	Certification Engineers Ltd	0.47	0.01
Bharat Immunologicals Ltd	2.67	0.00	Chennai Petroleum Ltd	2.56	0.01
Bharat Petro Resources Ltd	4.13	0.00	Coal India Ltd	1.58	0.02
Oil and Natural Gas Corporation Ltd	2.57	0.00	Coastal Karnataka Power Ltd	6.58	0.00
Bharat Petroleum Ltd	0.42	0.41	Coastal Maharashtra Mega Ltd	6.27	0.00
Bharat Pumps Ltd	0.98	0.14	Coastal Tamil Nadu PowerLtd	4.91	0.05
Bharat Refractories Ltd	7.85	0.25	Cochin Shipyard Ltd	2.67	0.01
Bharat Sanchar Nigam Ltd	4.67	0.30	Container Corporation Ltd	4.13	0.02
Bharat Wagon & Engg. Ltd	2.53	0.00	Cotton Corporation of India Ltd	0.47	0.21
Bharatiya Nabhikiya Ltd	4.94	0.30	Creda HPCL Biofuel Ltd	2.56	0.20

Source : Authors' calculations.
Note : *Significant at 0.05 level.

The formula for the unit root test :

$$\Delta Y_t = \beta_1 + \beta_{2t} + ZY_t - 1 + ai + et$$

Table-3 shows the significance of the error correction model. It is estimated in this research paper that since the stationary test value of the average share index are indicating the insignificance, the majority of decision of the portfolio values are showing that there is no unit root. In this connection, the selected portfolio values of volatility data is usually expected to attain stationarity at direction to established weak, or no weak, form of the capital market selected share values. This Table has also indicated that the result of the unit root test for the average annual market that there are serial dependencies of returns in some of the stock monthly returns. The ADF calculated values are statistically significant at 5 per cent critical level between the period between 2006 and 2016, except in the year of 2010 and 2011, that the ADF calculated values are not statistically significant at the second level sequencing of the stock value in the market. The paper has suggested that the years 2010 and 2011 for the market investor may

Table-3 : Summary of Result of Unit Root Test (ADF Test)

Expected Average Stock Price Returns Yearly	ADF Test Value	Critical Value of 5%	Decision of Portfolio	Conclusion of Portfolio
LnRt 2006	-2.365	-2.865	Unit root	Non-Stationary
LnRt 2007	-1.568	-2.658	No unit root	Non-Stationary
LnRt 2008	-4.467	-2.867	No unit root	Stationary
LnRt 2009	-2.034	-2.147	Unit root	Non-Stationary
LnRt 2010	-3.258	-2.852	No unit root	Stationary
LnRt 2011	-1.369	-2.654	Unit root	Stationary
LnRt 2012	-2.852	-2.352	Unit root	Stationary
LnRt 2013	-5.962	-2.798	Unit root	Non-Stationary
LnRt 2014	-4.568	-2.968	No unit root	Non-Stationary
LnRt 2015	-2.741	-2.052	No unit root	Stationary
LnRt 2016	-2.654	-2.364	No unit root	Non-Stationary

Source : E-Views 4.0 Result Output.

* Significant at 5% level, ADF test > Critical value, the variable is stationary.

follow the random walk model. It is apparent that some of the market share indices are efficient in the weak form of significance of market hypothesis in Indian stock market.

Table-4 shows the results of the weak, semi and strong forms of Efficient Market Hypothesis, based on the annual share index, to determine the expected stock returns for the selected sectors. The Variance-Ratio method has been used for detecting the performance of stock rate of return values of the stock market for efficient market hypothesis. The stock market share performance picked up in the period from 2006 to 2016 with huge performance records in the stock exchange market and to calculate the random walk of the market share based on the annual panel data analysis. Table-4 values tested the market efficiency hypothesis, based on the annual market share index from the national stock exchange. The t-test results recommend that majority of the market share indices follow the market hypothesis model because the probability value associated with the t-calculated value is less than 0.05 critical. Hence, it is statistically insignificant at 5 per cent

Table-4: Result of the Weak, Semi and Strong Form of Efficient Market Hypothesis Based on the Annual Share Index

Year Share Index	t-test	df	P-Value	P-Value <0.05
2006	25.236	9	0.652	Insignificance
2007	56.869	9	0.000	Significance
2008	45.359	9	0.096	Insignificance
2009	86.369	9	0.058	Insignificance
2010	27.567	9	0.000	Significance
2011	112.568	9	0.000	Significance
2012	67.967	9	0.038	Insignificance
2013	52.861	9	0.568	Insignificance
2014	20.538	9	0.960	Insignificance
2015	127.563	9	0.000	Significance
2016	37.869	9	0.000	Significance

Source : SPSS 17.0 Result Output t-test, 2017,

* Significant at 5% level

the research study indicates that for a large number of market shares, the stock market return values followed the market efficient hypothesis and more than 80 per cent of these market shares are inefficient in weak and semi-strong forms in the annual expected stock returns in the selected portfolio in chosen sectors.

The Auto-Correlation Test

The research paper testing for serial correlation is a straightforward test of the market efficient hypothesis. Auto-correlation of the serial correlation coefficient, measures the relationship between the values of a variable from 2006 to 2016. The study has decided that the null hypothesis of the test of lag k is that all auto-correlation co-efficients up to order k are equal to zero, whereas the alternative hypothesis is that these deviate from zero. The Ljung-Box Q statistic test is calculated as :

$$Q_{LB} = N(N+2)\sum_{j=1}^{k} \frac{Pj2}{N-j} \qquad .....(1)$$

Where P_j is the j^{th} autocorrelation and N is the number of observations.

Table-5 : The Serial Auto-Correlation Test to Determine the Public Sector Enterprises Efficiency

National Stock Exchange Index			
Logs	**Auto-Correlation Coefficient**	**Q-Stat**	**Prob**
1	-0.563	12.563	0.000
2	0.035	19.258	0.000
3	0.539	31.563	0.568
4	0.028	18.735	0.256
5	0.009	32.458	0.421
6	-0.586	19.480	0.003
7	-0.056	24.068	0.006
8	0.050	28.054	0.058
9	0.041	12.056	0.047
10	0.586	12.853	0.000
11	0.041	15.237	0.000

Source : Amos Result Output 2017.

* Significant at 5% level, Q-stat > 0.000

The data presented in Table-5 show the results about the unpredictability of the rate of return series and the calculated P value, with the help of serial auto-correlation and Ljung-Box Q-statistics. In this research study, the test was run for 11 lags. If P value <0.05 of Q-statistics value and the null hypothesis of the entire auto-correlation is insignificant and these two together equal to zero, these may be rejected at 0.05 level of insignificance. It is conditional from the result shown in Table-5 that the past rate of returns can be used to forecast future stock rate of returns and these variables show that the weak form of market efficiency hypothesis does not hold. Thus, the null hypothesis of no auto-correlation of return series is rejected for NSE in India during the period 2006 to 2016.

The Runs Test

The research paper adopted the runs test. The run test was the frequently used non-parametric test of the RWH. It does not require that return distributions are normally or test designed to examine whether successive return changes are independent. The non-parametric run test is applicable as a test of unpredictability for the sequence of returns.

The paper adopted the runs test. The run test was the frequently used non-parametric test of the RWH. It does not require that return distributions are normally or identically distributed and the condition that most stock return statistics cannot satisfy. The Runs test is a non-parametric test that is designed to examine whether successive return changes are independent. The non-parametric run test is applicable as a test of unpredictability for the sequence of returns.

To calculate to the run test values let, n_a and n_b correspondingly symbolically observations above and below the sample mean (or median), and symbolically the observed number of runs, with $n = n_a + n_b$

$$Z_{(r)} = \frac{r - E(r)}{\sigma(r)} \qquad .....(2)$$

Accordingly the above equation has denoted that the expected observation of runs can consequently be calculated by employing the following equation :

$$E_{(r)} = \frac{n + 2na, nb}{n} \qquad .....(3)$$

The standard error denoted by

$$\frac{2n_a n_b (2n_a n_b - b)}{n^2 (n-1)} \qquad .....(4)$$

The runs test is a non-parametric test that is widely used for testing the independence assumption of random walk. The runs test compares the

actual number of runs to the expected number of runs assuming price-change independence.

The results from Table-6 depicts the runs test. The Z statistic tests the insignificance of the changes between the expected number of runs and the actual number of runs. In the present research study, the change of these variable values have been found to be highly insignificant (P=0.029); and thus, the runs test accepts the null hypothesis of unpredictability in stock returns and in the same sequence the alternative hypothesis is rejected, based on the p value of the above Table (p values based on the median p= 0.029 and on the mean value p=0.009). It may been seen from Table-5 which indicate that the results remain the same when the mean, rather than the median is used. The study established the fact that the number of actual runs is less than the expected runs. Hence, Table-5 has helped in drawing the conclusion after long discussion of the results. That is to say, the market over-reacts to information whereby a share price change tends to be followed by further changes in the same direction.

Table-6 : Runs Test Result to Test Hypothesis of Public Enterprises Investment Strategies

Run Test Based on Median	NSE Index
Median value	0.069
Cases < median	937
Total Cases	1926
Number of Runs	164
Z	-4.539
P value	0.029
Run Test Based on Mean	NSE Index
Mean value	0.008
Cases < mean	683
Total Cases	1429
Number of Runs	843
Z	-4.834
P value	0.009

Source : E-Views 4.0 Result Output 2017.

* Significant at 5% level, Run Test Based on Median, Run Test Based on Mean.

Conclusion

The research study has drawn the conclusion from the data analysis that the market efficiency hypothesis depends on several factors. At times it behaves as efficient but sometimes it is not. Market efficiency may be improved with the market integration and enhancing the liquidity of the emerging market in relation to the PSEs. Informational efficiency is another issue which may be achieved through information sharing around the world. The main role of financial innovations in an Indian emerging market is crucial for the investors as it offers more and more investment opportunities to the investors and other stakeholders for the long-term finance. The paper found the determination of the efficient market hypothesis in an Indian emerging market from the selected public sector enterprises with the weak, semi-strong and the strong forms for these three levels. Besides the contemporary empirical studies on testing weak form efficiency conducted in emerging markets of the selected in the public enterprise sectors were reviewed. The paper has shown that the results of p-values, Q statistics prove that the movement of 32 stocks is non-stationary.

Hence it is concluded that those stocks movement follows the random walked. The overall results explain that there is possibility of earning extra income on the account of market inefficiency in the selected PSEs and to test the strong, semi-strong and weak forms of efficiency of the individual stock of public companies listed on NSE for the period 2006 to 2016, while the NSE All Share Index recorded a mean return of –0.013 per cent. The K-S test result concludes that in general, the individual stock returns do not follow random walk. Run test shows that the successive price changes are not random.

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E-governance Best Practices in Higher Education Institutions in Telangana State

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E-governance initiatives are common in most countries as they promise a more citizen-centric government and increase service quality and responsiveness. Unfortunately, most of these initiatives have not been able to achieve the benefits claimed specifically in higher education sectors. India has one of the largest higher education systems in the world. Despite having the largest higher education system, the quality of education, in general, cannot be claimed to be the best. Thus, with the emergence of technology and growing demand of the society, developed nations started adopting e-Governance in their Higher Education Institutions (HEIs) to better serve their students and all the stakeholders by means of efficient and effective services. Therefore, this study is an attempt to identify e-governance best practices in HEIs in Telangana state. To achieve the objectives of the research, the study conducted personal interviews with vice-chancellors, directors, faculty and supporting faculty of the HEIs. To understand from the user's perspective, the study also conducted focus group discussions with HEIs students and research scholars. A content analysis was performed manually to identify several best practices in HEIs in Telangana state. All the best practices are classified into four groups such as administration, teaching, learning, and research. Finally, the study provided some suggestions for effective implementation of e-governance system in HEIs.

Keywords : E-Governance, Higher Education Institutions (HEIs), Information and Communication Technologies (ICT), Telanagana State.

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Introduction

In the past, government organizations paid little attention to service quality or responsiveness to clients, but this changed with the movement termed "New Public Management" (NPM), which occurred in most developed nations around the 1990s (Heeks, 2001; Saxena, 2005). NPM emphasizes professional management practices rather than simply administration. E-governance is perhaps the second revolution in public management after NPM, which may transform not only the way in which most public services are delivered but also the fundamental relationship between government and citizen (Marche & McNiven, 2003). Thus, E-governance is described as the application of ICT to the processes of government functioning for good governance (Madon, 2004).

India has one of the largest higher education systems in the world. Despite having the largest higher education system, the quality of education, in general, cannot be claimed to be the best (Agarwal, 2006). Technical and vocational education in India has seen enormous growth in recent years with a large increase in a total number of institutes imparting higher education (Kaul, 2006). On one hand, this growth promises to produce more skilled youth to fulfill the needs of ever growing Indian industry and on the other hand,it poses a huge challenge for the governing bodies like the University Grants Commission (UGC), The All India Council for Technical Education (AICTE), National Council on Vocational Training (NCVT), National Council for Teacher Education (NCTE), etc and State Technical Education Boards to maintain and improve the quality of education being imparted through these new and existing technical and vocational institutes (Altbach, 2005).

Higher Education Institutions (HEIs) are one of the major consumers of ICT products and services as well as a major provider of services using ICT (Kolsaker & Lee-Kelley, 2008). ICT has helped the improvement of a range of activities such as a) Teaching, b) Learning, c) Research, d) Administration, etc. Significant developments have been made in the area of online teaching and learning (Saxena, 2005). Still, the demand for ICT based products and services are increasing at a rapid pace due to a rapid increase in student population and globalization of education.

However, with limited resource and inadequate financial support, implementing e-Governance models by an HEI would be more challenging than the government. Moreover, developing countries like India poses an additional

challenge in reaching a larger segment of the stakeholders, especially the student community. Thus, the objectives of this study are;

a) To review e-governance initiatives in India,

b) To identify e-governance best practices used in HEIs in Telangana state, and

c) To find challenges faced in usage and implementation of e-governance practices in HEIs in Telangana state.

Review of Select Literature

Recognizing the increasing importance of electronics, the Government of India established the Department of Electronics in 1970 (Dwivedi & Bharti, 2010). The subsequent establishment of the National Informatics Center (NIC) in 1977 was the first major step towards e-Governance in India as it brought 'information' and its communication in focus. However, the main focus for e-Governance was provided by the launching of NICNET in 1987 – the national satellite-based computer network (Kalsi, Kiran, & Vaidya, 2009). This was followed by the launch of the District Information System of the National Informatics Center (DISNIC) programme to computerize all district offices in the country (Centre on Governance, 1999a, b). Further, ongoing computerization, teleconnectivity, and internet connectivity boosted a large number of e-Governance initiatives, both at the Union and State levels (Dev, 1999). In the year 2006 the Government of India formally launched its National e-Governance Plan (NEGP). The e-governance initia-tives in India can be discussed under three categories : namely, i) Government to Citizen (G2C) initiatives, ii) Government to Business (G2B) initiatives and iii) Government to Business (G2B).

Government to Citizen (G2C) Initiatives

The category of e-government that focuses on interactions between government and citizens to support transactions can facilitate involvement and interaction with the government, enhancing the quantity and quality of public participation in government (Ashok Agarwal & V. Venkata Ramana, 2007). G2C interactions can allow citizens to be more informed about government laws, regulations, policies, and services. For example, voting information, tax filing, license registration or renewal, and payment of fines. Some of the G2C initiatives in India are :

- *Computerization of Land Records (Department of Land Resources, Government of India)*
- *Project FRIENDS in Kerala*
- *Mee Seva in Telanagana*

- *Admission to Professional colleges – Common Entrance Test (CET)*

Government to Business (G2B) Initiatives

Businesses are often required to interact with the government for diverse reasons such as getting business proposals, urging the government to take appropriate economic and fiscal policies, and so on. The interaction between businesses and governments is G2B services (Kalsi et al., 2009). In implementing G2B services, governments use electronic communication to address the needs of businesses. Some of the G2B initiatives in India are :

- *Society for Telangana State Network (SOFTNET) in Telangana*
- *Mobile Based Monitoring System in Telangana*
- *E-tendering in Telangana*

Government to Government (G2G) Initiatives

The government to government (G2G) model in e-governance involves distributing data or information between agencies, organizations or departments of government. G2G aims to play a supportive role for implementing e-governance by better communication, data sharing and enabling data access (Misra, Agarwal, & Kumar, 2001). Some of the G2G initiatives in India are :

- *Simple file tracking system in Telangana*
- *Command and Control Project for Police in Telangana*

Role of e-Governance in Higher Education

The scope of higher education is not just teaching and research, it also provides opportunities for lifelong learning, allowing people to upgrade their knowledge and skills from time to time based on the societal needs (Hashim, Alam, & Siraj, 2010). Even though, India is considered as one of the largest higher education systems in the world, still it is facing the different challenges to improve the quality of the education. If the quality of our higher education system has to be improved to make these institutes really a world class, then there is no alternative to the introduction of e-governance in this sphere at the fastest possible pace (Agarwal, 2006). Implementation of e-governance in technical and vocational institutes will enable their effective and real-time monitoring by government/ the regulatory bodies and other stakeholders, thereby enabling them to maintain quality and efficiency. Table-1 discusses the summary of the benefits of e-governance initiatives in HEIs.

Table-1 : Benefits of e-Governance in HEIs

Benefit to Universities	Benefits to Students	Benefits to Colleges
i) Centralized information to access from anywhere	i) Increase participation in education affairs	i) Data can access easily
ii) Increase in student enrollment ratio	ii) Personalized login for each students	ii) Electronic data exchange with university
iii) Provide quality e-services, e-participation	iii) extensive saving in time cost and efforts	iii) Saving of hidden operational cost
iv) Increase clearness	iv) Information and transaction services	iv) Instant statistical report generation
v) Inventive teaching tools	v) Job opportunities	v) Helpful for NAAC accreditation
vi) Improved decision-making, Private Public Participation	vi) Social connectivity for collaboration	vi) Long-term impact on organization goals
vii) Less paper work	vii) Students can access virtual lectures and Seminars	vii) Empowerment of faculties, students and encouragement of their participation in governance

Higher Education in Telangana State

Telangana state higher education institutions' structure is depicted in Table-2 wherein the total number of HEIs are approximately 2,483 alongside a total number of students who are approximately 5,93,209.

The objectives of Telangana state government to encourage e-governance in the HEIs are :

a) To facilitate timely delivery of services and information availability to all the stakeholders.

b) To provide a platform where involvement of all the stakeholders is ensured for decision-making.

c) To transform the system into an extremely efficient, secure, transparent and result oriented one.

d) To facilitate the requisite technical support required for teaching and learning process.

e) To offer technological support to all the constituent administrative units of the system.

Table-2 : An Overview of Higher Education Institutions in Telangana State

Conventional Universities (6)	**Specialized and Technology Universities (10)**	**Central Universities (3)**
1) Osmania University 2) Kakatiya University 3) Palamuru University 4) Telangana University 5) Satavahana University 6) Mahatma Gandhi University	1) Jawaharlal Nehru Technological University (JNTU), Hyderabad. 2) Jawaharlal Nehru Architecture & Fine Arts 3) Potti Sreeramulu Telugu University 4) Dr.B.R. Ambedkar Open University 5) Prof. Jayasankar Agricultural Telangana State University 6) Kaloji Narayanarao University of Health Sciences, Warangal 7) Sri Konda Laxman Telangana State Horticultural University 8) Sri P.V.Narasimha Rao Telangana State Veterinary University 9) NALSAR Law University 10) Rajiv Gandhi University of Knowledge Technologies, Hyderabad.	1) University of Hyderabad 2) The English and Foreign Languages University 3) Moulana Abdul Kalam Azad Urdu University
National Institutes (2)	**Deemed Universities (2)**	**State Institutes (University Status) (1)**
1) Indian Institute of Technology (IIT) 2) National Institute of Technology (NIT) 3) Centre for Cellular & Molecular Biology (CCMB) 4) National Institute of Rural Development and Panchayati Raj (NIRD) 5) National Institute of Nutrition (NIN)	1) ICFAI 2) Indian Institutes of Information Technology (IIIT) 3) Others ● Indian School of Business (ISB) ● Birla Institute of Technology and Science-BITS (H), ● Mahindra Tech, Symbiosis, ● GITAM, ● K.L. University	1) NIMS – Nizam's Institute of Medical Sciences

Methodology

The broad methodology was adopted to achieve the objectives of the research. The study used primary and secondary data.

Research Design

The study used personal interview method and focus group discussions to collect the data from the target respondents. The target population for the study comprises Vice-Chancellors and Directors of the universities (at policy-making level), faculty and supporting faculty (at supporting-level), and students and research scholars (at users level). The total sample used for the study is 110. The distribution of the sample is depicted in Table-3.

The first stage intended to collect the data from the first two levels (policy-making and supporting-level). Personal interviews were conducted with Vice-chancellors of the universities, Directors of the institutions, faculty and supporting faculty of the HEIs'. A semi-structured questionnaire was used to collect the requisite data. Three types of questions were posed to the respondents. They are, i) what are the best practices being used ii) what are the challenges being faced iii) what are the suggestions for the betterment. In the second stage, the focus group discussions were conducted to the students based on the same questions that were posed in the first stage of interviews. After the completion of the data collections, the researchers have done the content analysis manually and derived some conclusions that are discussed in the following paragraphs.

Findings and Discussions

E-governance best practices in HEIs in Telangana state

The e-governance best practices in HEIs are classified into four groups. They are :

Administration

- ***Bio-Metric linked ADHAAR*** for students, teaching, and non-teaching staff to ensure the attendance to

Table-3 : Sampling Distribution

Levels	Designations	Sample
Policy-making level	Vice-chancellors and Directors	10
Supporting level	Faculty and supporting faculty	30
Usage level	Students	50
	Research scholars	20
	Total	**110**

improve the quality of education in Universities by improving the

- ***National Digital Locker System*** is adapted to store the e-certificates in cloud which can sign up with mobile, synchronized with AADHAAR, facilitates sharing and verification by request.
- ***Digitized on Screen Evaluation System*** in exams which makes the publishing results in time and increases the authenticity of evaluation.
- ***Computer Based Test (CBT)*** for the Internal Assessments to facilitate all PG courses.
- ***Online Question Paper Downloading*** at Undergraduate (UG) as well as Post-graduate (PG) Examination Centre's to overcome the malfunctioning, misuse, leaks in exam papers. Maintaining the tracking system that is the IP address and geographical location of the concerned examination centre to facilitate smooth conducting of exam.
- ***Social Media*** for advertisement of university notification of admission, faculty recruitment notification and tenders notifications to get maximum output with fewer resources.
- ***Wi-Fi*** enabled campuses to make more use of the digital platform for learning within the campus at any time.
- ***University Automation Software*** is used at three modules, i.e., Examination, Fee Management, HR & Payroll. And automation is implemented widely in pre-exam, during the exam, post-exam, and services along with the recruitment process from online application submission to admission.

Teaching

- ***MOOCs (Massive Open Online Courses)*** : MOOCs is an online course aimed at unlimited participation and open access via the web in addition to traditional course materials such as filmed lectures, readings and problem sets.
- ***Study Webs of Active –Learning for Young Aspiring Minds (SWAYAM)*** : to provide the opportunity to the students, as additional exposure to different types of information, lectures and teaching styles
- ***National Programme on Technology Enhanced Learning (NPTEL) :*** Supplementing teaching with these e-lectures and e-learning is to improve the quality of the education and make students industry ready by knowing updated technology.

Learning

- ***E-Library*** : Establishment of e-Library to make available the ebooks of all subjects. It enables to access the e-books 24x7 for students and faculty. The management of the library is digitalized in all universities of Telangana state making more efficient use and tracking of books and journals.
- ***E-learning Software and Databases*** : Subscription of e-learning software and databases is one of the new initiatives of universities helping in the creation of knowledge by researchers and faculty meanwhile creating an impact on the delivery of lectures.
- ***Centre for Learning Technologies*** : has been established to develop e-Learning content for regular students and distance education syllabus. Technology learning process, e-learning platforms and multimedia are widely used to make a mark in digital education delivery.
- ***Open Educational Resource (OER) :*** with the collaboration of Commonwealth Educational Media Centre for Asia (CEMCA) to improve the quality in the content and extend the availability of information to all students, researchers and faculty.

Research

- ***Online Databases :*** As part of acquiring new books the university has subscribed to J-Gate journals providing access to 1,500 journals and "Shodhganga" for accessing Ph.D theses. Support of INFILIBNET is sought for expanding library resources.
- ***Anti-Plagiarism Software*** : Creation of non-print repositories (in electronic/digital format) for better storage of projects reports, thesis and publications and anti-plagiarism software "Turnitin" are made available to prevent the copy research.
- ***Grammar Check Software*** : In addition to that, grammar check software "Grammarly" is exercised by universities to improve the publication standards.

E-Governance Challenges in HEIs

- Lack of clear goals
- Inadequacy of funds
- lack of talented workforce
- Data backlog
- Change management
- Lack of Coordination among different departments

- Lack of will for information dissemination
- Rigid mindset to innovation and doing things differently
- Lack of technically superior connectivity
- Maintenance challenge

Suggestions and Conclusions

To ensure a successful implementation of e-governance systems, there should be effective communication between all levels of stakeholders specifically between ICT personnel and management. Planning and designing of Information System need to be improved over past practices. There should be a code of conduct for the administration of e-governance systems. Proper training with adequate funding should be given to ICT supporters and users. Finally, all the stakeholders should accept the new changes for the betterment of administration, teaching, learning and research in HEIs.

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Working of State Universities in Punjab : An Exploratory Report

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The present study attempts to explore the working of state universities of Punjab based on their academic and financial indicators for the period 1990-91 to 2014-15. In order to have a detailed analysis, the average annual growth rates for different time periods were worked out for income and expenditure components of state universities. The overall growth for the period 1990-2014 is denoted as P. The period has been sub-divided into the P1 (from 1990 to 1999), P2 (from 2000 to 2009) and P3 (2010 to 2014). The results revealed that though there is tremendous increase in enrollment of students, but due to shortage of infrastructural facilities, the quality of higher education in the state universities is impacted adversely. The expenditure of universities is increasing day by day but revenue is remaining more or less stable, resulting in ever increasing deficit of universities. To overcome the deficit, universities have increased its tuition fee, examination fee and registration fee, which have adversely affected the careers of brilliant but poor students. Therefore it is required that the state government should adopt effective measures to mobilize financial resources and make effort to release grants and funds on priority basis in advance, so that this critical sector should not suffer on account of delay of grants.

Keywords : Punjab, State Universities, Income, Expenditure.

Introduction

"Higher education plays a necessary and an increasingly important role in human, social, and economic development" (Escrigas 2008). Though the higher education institutes are vital for development, the institutions imparting it are also complex, fluid and dynamic in nature as they exhibit numerous different capabilities and scope, and are imperative in the process of development both directly and indirectly through teaching, research and service. Despite the clear importance of this sector as engines of development, it is facing severe financial crisis throughout the world, due to the acute pressure of enrollment expansion on one hand and lower priority accorded to this sector as compared to primary and secondary sector by the respective governments.

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Higher education in India has expanded at a very fast rate during the post-independence era, with their spectacular increase in the number of institutions and student enrollment. "At present, there are 753 universities and university level institutions, which include 47 Central Universities, 123 Deemed Universities, 345 State Public Universities, 235 State Private Universities and 3 Institutions of National Importance and 41,435 colleges in the country, having a total enrollment of 28484746 million". (*UGC Annual Report*, 2016-17).

Punjab, a North Western State of India, is ranked thirteenth among the states as far as numbers of universities are concerned. The structure of higher education in Punjab follows the same pattern as followed at the international level, and higher education in the State is being imparted through universities, colleges of general education and colleges of professional education." At present, there are twenty-six universities in the State of which, eleven are state universities, eleven state private universities, and two Deemed Universities" (*UGC Annual Report*, 2016-17). Though the higher education sector in Punjab has experienced dramatic changes but the ability of the State universities to cope up with these changes and challenges is extremely doubtful. It has been observed that the unprecedented growth in the number of institutions and enrollment in the past decades requires a sharp increase in educational expenditure of the state government but pursuing the state budgets, it is observed that the Government of Punjab has been allocating around just 8.66 per cent of its financial resources to higher education, which is extremely low as compared to other states. With the opening of this sector to foreign institutes and setting up of private universities, a critical situation has been created for State universities. The government grant to universities and other institutions of higher learning is diminishing, creating a financial mess in these institutions. The mounting salaries and no proportional hike in government grants or fees are the main reasons that most of the universities of the State have slipped into serious financial crisis." This has been reflected in the Comptroller and Auditor General's Report (2017), which points out that the state government grants have been inadequate and irregular. Generally, the grant-in-aid policies of the state government exhibit lack of concern for balanced expansion of university education in the State. As results there exist inter- universities inequalities in financial provisions by the state government" (Government of Punjab, 2017).

Against this background, the present paper is an attempt to explore the working

of State Universities in Punjab and to highlight the major strength and weakness in their working.

Database and Methodology

In order to examine the working of state universities in Punjab, the three major universities, namely Panjab University, Chandigarh; Punjabi University, Patiala and Guru Nanak Dev University, Amritsar were selected out of total eleven state universities. These universities are the main college affiliating universities, which have their regional campuses too. The Panjab University covers eight districts (Ludhiana, Moga, Ferozpur, Muktsar, Sangrur, Nawashahr, Hoshiarpur and Chandigarh), of Punjab while the Punjabi University covers nine districts (Patiala, Barnala, Fategarh Sahib, Sangrur, Bathinda, Mansa, Mohali, Rupnagar and Faridkot) and GNDU covers seven districts (Amritsar, Jalandhar, Gurdaspur, Pathankot, Kapurthala, Tarn Taran and Shaheed Bhagat Singh Nagar) of Punjab. For the present study, only the information regarding the main campus has been taken. The information regarding their academic indicators like number of teaching staff, non-teaching staff, total enrollment, the number of affiliated colleges and number of regional campuses were collected from the various Budgetary Reports, Annual Reports as well as from the official websites of the three Universities for the period between 1990 and 2014. In order to have a ring-side view regarding their academic performance, the compound growth rates were calculated by fitting the exponential function as shown below :

"$Y_t = ab^t e^u$ .....(1.1)

Transforming the equation in linear form

$\text{Log } Y_t = \log a + t \log b + U \log e$ .....(1.2)

Where, Y_t = value of total organised sector in year t

t = trend variable

u = disturbance term

a, b are constants.

From the estimated values of regression co-efficient 'b' the compound rate of growth 'r' was calculated as follows :

$r = (\text{antilog } \hat{b} - 1) \times 100$ .....(1.3)

Where, $\hat{b}$ = estimated value of b." (Gupta, 2008)

With a view to having a detailed analysis, the average annual growth rates for different periods were worked out for income and expenditure components of state universities. The overall growth for the period 1990-2014 is denoted as P. The period has been sub-divided into the P_1 (from 1990 to 1999), P_2 (from 2000 to 2009) and P_3 (2010 to 2014).

Growth rates have been calculated by using semi-logarithmic function.

$$Y = ab^t \quad .....(1.4)$$

Taking natural logarithm, we can specify our growth equation as –

$$\log Y = \log a + t\log b = \alpha + \beta_t \quad .....(1.5)$$

Where Y is dependent variable, β is the rate of growth and 'a' and 'b' are constants.

Physical Performance of the Universities

Panjab University, Chandigarh

Panjab University was established in 1882 as University of Punjab at Lahore (now in Pakistan). Post-independence, in 1960, it shifted to its present campus at Chandigarh, Punjab. It is spread over an area of 550 acres in Sectors 14 and 25 of the city of Chandigarh. "The University has 78 teaching and research departments and 15 Centers/Chairs for teaching and research at the main campus. It has 188 affiliated colleges spread over Punjab and one rural Regional Centre at Kauni, and three Regional Centers at Muktsar, Ludhiana and Hoshiarpur and four Constituent Colleges located at Sikhwala (Sri Muktsar Sahib), Balachaur (SBS Nagar), Nihalsingh Wala (Moga) and Guru Harsahai (Ferozepur). It has been imparting education in Arts, Letters, Science and the Learned professions" (www.puchd.ac.in).

Table-1 : Profile of Panjab University, Chandigarh (Main Campus)

Year	Number of Teaching and Research Departments	Staff Employed		Students Enrolled			Research Undertaken	
		Teaching Staff	Non-Teaching Staff	Male	Female	Total	Ph.D Awarded	Paper Published
1990	43	583	542	2421	2386	4807	89	461
1995	43	580	675	2502	2428	4930	126	368
2000	45	579	728	2902	3099	6001	94	584
2005	51	503	714	2996	3633	6629	126	646
2010	67	449	738	4121	5341	9462	195	965
2014	78	513	750	4305	5557	9862	169	1054
Compound Growth Rates	2.51	-0.53	1.36	2.43	3.58	3.04	2.71	3.50

Source : Annual Reports of Panjab University (Various Issues).

Table-1 reveals a brief picture of the Panjab University, Chandigarh at its main campus at six different points of time. The number of departments, faculty both teaching and research, enrollment of students, Ph.D awarded and number of papers published were considered as academic indicators of the University. The results of the study revealed that the total number of teaching and research departments has increased from 43 in 1990 to 78 in 2014, at a compound growth rate of 2.51 per cent annually, while the total enrollment has nearly doubled to 9,862 in 2014 from 4,807 in the 1,990, showing a higher growth of 3.04 per cent annually. This was due to increase in female student enrollment (3.58 per cent annually) as compared to enrollment of male students (2.43 per cent annually), but the growth of teaching faculty is not commensurate with enhancement in enrollment, as there is a decline of teaching faculty from 583 in 1990 to 513 in 2014, having a negative growth of -0.53 per cent annually. The faculty posts are lying vacant in the university, which has resulted in an adverse student teacher ratio. Due to financial constraints, the university is now employing teachers on a contract-basis or lecture-basis, which adversely affects the quality of education. The compound annual growth rate for non-teaching staff (1.36 per cent annually) was found to be satisfactory. The number of students awarded Ph.D also increased from 89 in 1990 to 169 in 2014, while the other aspect of research i.e., number of publications increased at 3.50 per cent, indicating increase in research work in the university.

Punjabi University, Patiala

Punjabi University, Patiala was established on April, 30th 1962 in the city of Patiala with main objective of furthering the cause of Punjabi language, Art and Literature. It is spread over 600 acres of land, with its 500 teachers imparting instruction and guidance to nearly 6,000 students. The university has 65 teaching and research departments. It has 232 affiliated colleges and five regional campuses.

Table-2 depicts the academic profile of Punjabi University, Patiala. The number of departments have increased at a rate of 1.70 per cent annually from 36 in 1990 to 54 in 2014. The total enrollment of students has increased from 2,507 in 1990 to 5917 in 2014, registering a growth of 3.64 per cent annually. The number of male students have also increased at a compound annual rate of 4.13 per cent as compared to the growth of female students which stood at 3.40 per cent annually. The compound growth rate for the number of teaching staff was found to be marginal at 0.09 per cent annually, while for non-teaching staff it was 2.02 per cent indicating that

Table-2 : Profile of Punjabi University Patiala (Main Campus)

Year	Number of Teaching and Research Departments	Staff Employed		Students Enrolled			Research Undertaken	
		Teaching Staff	Non-Teaching Staff	Male	Female	Total	Ph.D Awarded	Paper Published
1990	36	315	216	785	1722	2507	41	266
1995	37	303	216	651	1177	1828	53	261
2000	40	273	219	1005	1445	2450	36	187
2005	46	273	264	1676	2115	3791	23	220
2010	49	297	293	2728	4394	7122	34	142
2014	54	322	349	2073	3844	5917	30	557
Compound Growth Rates	1.70	0.09	2.02	4.13	3.40	3.64	-1.29	3.13

Source : Annual Reports of Punjabi University (Various Issues).

once again the growth of teaching staff was inadequate as compared to the teaching staff. The indicator of research, number of Ph.D degree awarded has registered negative growth to the tune of -1.29 per cent as their number declined from 53 in 1995 to 30 in 2014, indicating that there was lack of students enrolled for research work in the university, though the number of publications correspondingly increased from 266 in 1990 to 557 in 2014 with a compound growth rate of 3.13 per cent.

Guru Nanak Dev University, Amritsar

Guru Nanak Dev University, Amritsar was established at Amritsar, on November 24, 1969 to mark the 500th birth anniversary of Sri Guru Nanak Devji, to cater to the educational needs of border areas with focus on imparting education and promoting research in Humanities, Learned Professional, Science, especially of applied nature and technology. It is spread over a stretch of 500 acres towards the West of city of Amritsar and has 35 teaching and research departments and 148 affiliated colleges and 71 associated institutions, mostly situated in rural areas and four regional campuses.

Table-3 shows the compound growth rates of academic indicators of Guru Nanak Dev University. As seen from the above Table, the number of teaching and research departments registered a growth of 0.12 per cent only. The total enrollment has increased from 2,501

Table-3 : Profile of Guru Nanak Dev University, Amritsar (Main Campus)

Year	Number of Teaching and Research Departments	Staff Employed		Students Enrolled			Research Undertaken	
		Teaching Staff	Non-Teaching Staff	Male	Female	Total	Ph.D Awarded	Paper Published
1990	34	353	87	950	1551	2501	34	219
1995	30	279	83	1269	1219	2488	38	294
2000	28	275	110	1427	1335	2762	61	374
2005	35	278	118	1392	2116	3508	80	379
2010	35	327	126	2603	2917	5520	80	559
2014	35	290	139	3870	4750	8620	85	744
Compound Growth Rates	0.12	-0.81	1.97	6.03	4.77	5.29	3.89	5.23

Source : Annual Reports of GNDU University (Various Issues).

in 1990 to 8,620 in 2014 at a compound growth rate of 5.29 per cent. The problem of shortage of teaching faculty can be seen in this university also. It can be ascertained from the above data that the compound growth rate for teaching staff was found to be negative, i.e. -0.81 per cent annually, indicating that the teaching faculty has not kept pace with the growth of enrollments, which has a growth rate of 5.29 per cent annually, thus causing a great imbalance between student-teacher ratio. The growth rate of non-teaching staff over the period was 1.97 per cent, Ph.D awarded and paper published also showed a compound annual growth rate of 3.89 per cent and 5.23 per cent annually.

Section-II

Financial Positions of Universities

The present section focuses on a critical area in the financial working of these universities for the period 1990 to 2014 and the main sources of revenue are –

- Examination fee- includes examination fee of all courses at main campus, regional campuses, affiliated colleges as well as that of private candidates.
- Registration fee- includes fee charged for registration, continuation, issue of certificates, degrees in absentia, as well as from re-evaluation and rechecking.

- Tuition fee- it includes tuition fee and funds from all teaching departments.
- Income from library- it covers income from fines etc.
- Miscellaneous income- includes the income from sale of forms, calendars, prospectus, and sale of waste papers and other articles, application fee (recruitment), service security, bus passes, NSS fee from students, rent of canteens, hostels, banks and post office etc.
- Grants from state government- includes grant-in-aid from Punjab government for maintenance and revised pay scale arrears of teachers.
- Grants from central government- includes the grant-in-aid from central government.

Panjab University, Chandigarh

It is observed from Table-4 that the maximum revenue receipts in the case of Panjab University, Chandigarh are coming from central government. Though there has been a significant increase in income of the university in all the periods, there has been a marginal decline post-2010 period as indicated by the growth rate in P_2 which was 0.80 per cent during this period P (1990-91 to 2013-14) and in P_2 also but it was not significant during P_1.

Table-4 : Sources of Revenue for Panjab University, Chandigarh

Years	Examination Fee	Registration Fee	Tuition Fee	Income from Library	Miscella-neous	Grants from Punjab Government	Central Government Grants	Total
1990-91	294013.5 (5.22)	44958.02 (0.80)	31687.07 (0.56)	2360.786 (0.04)	169169.4 (3.00)	1805607 (32.06)	3284203 (58.31)	5631999 (100)
1991-92	322264.3 (6.02)	42812.57 (0.80)	24324.29 (0.45)	2629.819 (0.05)	212877.2 (3.98)	1739893 (32.51)	3006196 (56.18)	5350997 (100)
1992-93	393843.5 (7.34)	61400.57 (1.14)	21780.96 (0.41)	1465.568 (0.03)	192382.6 (3.59)	1853654 (34.57)	2837195 (52.91)	5361723 (100)
1993-94	320269.8 (5.86)	58399.35 (1.07)	19802.72 (0.36)	1724.437 (0.03)	171585.3 (3.14)	1709362 (31.26)	3186897 (58.28)	5468041 (100)
1994-95	292435.2 (5.10)	55983.83 (0.98)	22300.08 (0.39)	1470.99 (0.03)	233365.8 (4.07)	2012174 (35.12)	3111224 (54.31)	5728954 (100)
1995-96	315210.7 (5.52)	62790.83 (1.10)	20597.03 (0.36)	1748.579 (0.03)	174436.2 (3.05)	2074491 (36.31)	3063927 (53.63)	5713202 (100)
1996-97	296282.3 (4.78)	46146.59 (0.74)	21604.51 (0.35)	1306.242 (0.02)	174173.6 (2.81)	2217789 (35.79)	3439527 (55.50)	6196829 (100)

(Contd...)

1997-98	270783.3 (4.32)	43064.72 (0.69)	21069.61 (0.34)	647.33 (0.01)	169584.3 (2.71)	2225618 (35.54)	3531161 (56.39)	6261929 (100)
1998-99	662100.2 (8.76)	85683.29 (1.13)	30823.22 (0.41)	798.0358 (0.01)	192325.2 (2.54)	2434993 (32.21)	4153472 (54.94)	7560195 (100)
1999-00	792679.7 (11.07)	98057.31 (1.37)	77098.09 (1.08)	686.5413 (0.10)	210316.3 (2.94)	1997925 (27.91)	3980583 (55.61)	7157345 (100)
2000-01	1733084 (21.13)	203199.9 (2.48)	474053.8 (5.78)	717.8307 (0.01)	313754.4 (3.82)	2306609 (28.13)	3169386 (38.65)	8200805 (100)
2001-02	1841829 (22.53)	217471.5 (2.66)	583279.9 (7.13)	1080.8974 (0.01)	302785.3 (3.70)	1940683 (23.74)	3287063 (40.21)	8174193 (100)
2002-03	2197601 (24.52)	270548.6 (3.02)	803185.5 (8.96)	3806.011 (0.04)	310820.7 (3.47)	1725710 (19.25)	3651420 (40.74)	8963093 (100)
2003-04	2162729 (26.28)	285612.3 (3.47)	898135.1 (10.92)	2086.681 (0.02)	367565 (4.46)	1691332 (20.55)	2823319 (34.30)	8230779 (100)
2004-05	2327429 (26.39)	347491.3 (3.94)	1250005 (14.17)	1950.88 (0.02)	587295.5 (6.66)	1457778 (16.53)	2848520 (32.29)	8820469 (100)
2005-06	2796429 (30.49)	316634.5 (3.45)	911061 (9.93)	1603.214 (0.02)	409028.1 (4.46)	1671464 (18.22)	3065179 (33.42)	9171399 (100)
2006-07	2873355 (32.22)	337864.9 (3.79)	953531.9 (10.69)	1691.056 (0.02)	421878.9 (4.73)	M1442611 (16.18)	2885222 (32.36)	8916155 (100)
2007-08	2638983 (30.03)	357143.6 (4.06)	834004 (9.49)	2127.611 (0.02)	596307.4 (6.79)	1247166 (14.19)	3111199 (35.40)	8786930 (100)
2008-09	2931224 (34.95)	327862.4 (3.91)	731846.1 (8.73)	1291.649 (0.01)	456857.5 (5.45)	1359163 (16.21)	2577370 (30.73)	8385614 (100)
2009-10	3180799 (36.42)	356577.6 (4.08)	696138.2 (7.97)	1030.495 (0.01)	449286.6 (5.14)	1619931 (18.54)	2429896 (27.82)	8733658 (100)
2010-11	3700045 (34.32)	394428.3 (3.66)	773879.9 (7.18)	1580.038 (0.01)	417885.7 (3.88)	1564391 (14.51)	3926530 (36.43)	10778741 (100)
2011-12	3348155 (21.78)	341419.6 (2.22)	819206.1 (5.33)	1532.208 (0.01)	397373.4 (2.58)	1250782 (8.13)	9216225 (59.94)	15374694 (100)
2012-13	3578498 (26.72)	654168 (4.88)	843497 (6.30)	1415.024 (0.01)	334232.4 (2.50)	1167815 (8.72)	6810969 (50.86)	13390595 (100)
2013-14	3884741 (25.98)	658034.4 (4.40)	356510.1 (2.38)	1818.394 (0.01)	117463.1 (0.78)	1005117 (6.72)	8936404 (59.73)	14960088 (100)

** Figure in parentheses is percentage share.*

(Contd...)

Average Annual Growth Rates – Income (Panjab University)								
Period	Examination Fee	Registration Fee	Tuition Fee	Library	Miscella-neous	Grant from Punjab	Grant from Central	Total
P	0.927	0.939	0.842	0.085	0.542	-0.767	0.479	0.936
t-values	(11.37)**	(12.46)**	(7.16)**	0.392	(2.96)*	-5.47	2.5	(12.14)**
P_1	0.711	0.699	0.688	-0.897	0.36	0.801	0.694	0.942
t-values	2.86	2.77	2.68	-5.72	1.09	(3.79)*	2.72	(7.94)**
P_2	0.962	0.854	-0.388	-0.31	-0.304	-0.815	0.659	0.8
t-values	(11.63)**	(5.45)**	-1.39	-1.08	-1.06	-4.67	2.9	(4.25)*

Source : Budgetary Reports of Panjab University, Chandigarh (Various Issues).

Figures in parenthesis are t-value

** Significant at 1 per cent level, * Significant at 5 per cent level

The share of central grant was found to be more or less constant at 59.73 per cent, but was found to non-significant throughout the study period, while the share of state grants had decreased from 32.06 per cent in 1991 to 6.72 per cent in 2013-14, but it was found to be positive and significant in the period P_1 only. The share of the examination fee and registration fee showed an increase, with average annual growth rates being highly significant for entire periods P as well as for P_2, to the tune of 0.927 and 0.939 per cent in P and 0.962 , 0.854 per cent in P_2 respectively, but was found to insignificant in period P_1 i.e., from 2000-2010. The tuition fee also registered significant growth of 0.842 per cent in the period P and observed to be non-significant in the remaining period. The growth rates of the share of income from library and miscellaneous head was found to be non-significant throughout the study period.

Punjabi University, Patiala

It is observed from Table-5 that the major chunks of revenue in the case of Punjabi University emanates from the state government grants, but its share had decreased from 83.07 per cent in 1990-91 to 30.88 per cent in 2013-14 and was found to be insignificant throughout the study period.On the other hand, while the share of examination fee, registration fee and tuition fee in the total income has increased from 5.74, 0.30 and 2.04 per cent in 1990 to 21.65, 25.20 and 6.56 per cent in 2013-14 respectively, indicating that the role of state government support has been diminishing, and it is quite obvious that universities are exploring

other ways and means to augment income to meet their mounting expenditure.

The average annual growth rates for examination fee and registration fee were found to be highly significant during the period P, P_1 and P_2 to the tune of 0.944, 0.971, 0.865 and 0.943, 0.945, 0.911 per cent respectively, indicating that the financial burden on students was growing every year. This adversely affects the brilliant but poor students, who may not afford the luxury of higher education. The tuition fee was found to be significant with average annual growth rate of 0.726 per cent in the period P only, but observed to be insignificant in P_1 and P_2. It is interesting to note that the share of income from library, miscellaneous and other heads to total income has also increased and registered significant growth in period P to the tune of 0.815, 0.919 and 0.810 per cent respectively.

Guru Nanak Dev University, Amritsar

Table-6 depicts the share and average annual growth rates of income components of Guru Nanak Dev University. There have been a tremendous growth in the total income of university and it was found to be highly significant throughout the study period. It was observed from the Table that the share of state grants in total income of

Table-5 : Sources of Revenue of Punjabi University, Patiala

Years	Examination Fee	Registration Fee	Tuition Fee	Income from Library	Miscella-neous Income	Grants from Punjab Government	Other Income	Total
1990-91	230481 (5.74)	11925.55 (0.30)	82104.13 (2.04)	1926.641 (0.05)	107357.2 (2.67)	3337332 (83.07)	54379.09 (1.35)	4017501 (100)
1991-92	262381.1 (6.17)	13105.93 (0.31)	92647.54 (2.18)	1047.671 (0.02)	189916.2 (4.47)	3447336 (81.10)	59795.43 (1.41)	4250833 (100)
1992-93	240115.8 (5.96)	13200.49 (0.33)	80869.07 (2.01)	1130.092 (0.03)	243945.8 (6.06)	3237520 (80.43)	13683.62 (0.34)	4025456 (100)
1993-94	423970 (9.91)	27725.83 (0.65)	91650.85 (2.14)	912.2278 (0.02)	379265.2 (8.87)	3219122 (75.29)	7962.144 (0.19)	4275731 (100)
1994-95	502012.4 (11.98)	43838.57 (1.04)	185190.9 (4.42)	1891.048 (0.04)	335435.6 (8.00)	3014061 (71.91)	1103.713 (0.03)	4191457 (100)
1995-96	609809 (11.66)	53443.42 (1.02)	284378.1 (5.44)	1601.989 (0.03)	312990.3 (5.98)	3814628 (72.92)	10064.83 (0.19)	5230840 (100)
1996-97	587986.2 (12.37)	45127.29 (0.95)	378382.6 (7.96)	1649.849 (0.03)	382462.9 (8.05)	3207010 (67.47)	1156.494 (0.02)	4753207 (100)

(Contd...)

1997-98	722474.7 (14.51)	58395.4 (1.17)	497986.5 (10.00)	13484.67 (0.27)	467572.2 (9.39)	3106107 (62.40)	1394.295 (0.02)	4977789 (100)
1998-99	1004921 (17.27)	75105 (1.29)	579254 (9.95)	12917.77 (0.22)	475913.5 (8.18)	3542544 (60.88)	1201.051 (0.02)	5819029 (100)
1999-00	1041133 (17.80)	84150.12 (1.44)	586620.8 (10.03)	14985.19 (0.26)	479826.5 (8.20)	3499442 (59.82)	1196.044 (0.02)	5850168 (100)
2000-01	1147960 (20.36)	97226.27 (1.72)	718966.7 (12.75)	18666.28 (0.33)	535482.2 (9.50)	2935603 (52.07)	1168.095 (0.02)	5636997 (100)
2001-02	1435319 (22.26)	108826.1 (1.69)	811126.2 (12.59)	20016.36 (0.31)	852795.7 (13.23)	2913414 (45.20)	179106.3 (2.78)	6446918 (100)
2002-03	1655613 (26.61)	110479.4 (1.77)	792002.8 (12.73)	20769.09 (0.33)	824337.7 (13.25)	2694176 (43.31)	190.589 (0.003)	6220884 (100)
2003-04	1666734 (24.39)	142409.5 (2.08)	1288863 (18.86)	25473.97 (0.37)	810608.3 (11.86)	2554527 (37.38)	222455.3 (3.25)	6832899 (100)
2004-05	1724076 (21.59)	136601.3 (1.71)	1684279 (21.10)	29955.32 (0.37)	1196519 (14.99)	2540410 (31.82)	499357.8 (6.25)	7983354 (100)
2005-06	2027857 (19.24)	147535.6 (1.40)	1949668 (18.49)	32697.2 (0.31)	1238488 (11.75)	4631829 (43.94)	304225.2 (2.88)	10541698 (100)
2006-07	1863547 (20.05)	300140.3 (3.23)	1440863 (15.50)	27878.76 (0.30)	1435651 (15.44)	3450332 (37.12)	290943.3 (3.13)	9294819 (100)
2007-08	2682488 (30.29)	260112.2 (2.94)	1521971 (17.18)	27884.06 (0.31)	1210622 (13.67)	2563910 (28.95)	279395.5 (3.15)	8855967 (100)
2008-09	2423962 (22.67)	254469.8 (2.38)	1378857 (12.89)	27330.8 (0.25)	1003661 (9.39)	4982431 (46.60)	236908.8 (2.21)	10692508 (100)
2009-10	2201304 (20.34)	303473.7 (2.80)	1546816 (14.29)	22547.38 (0.21)	1053909 (9.74)	4978640 (45.99)	217482.7 (2.01)	10823271 (100)
2010-11	2468865 (24.04)	2713954 (26.43)	439918.6 (4.28)	22083.58 (0.21)	1279828 (12.46)	2823765 (27.50)	179790.4 (1.75)	10268719 (100)
2011-12	2677721 (24.59)	2822429 (25.92)	671761.4 (6.17)	21615.06 (0.20)	1410703 (12.95)	2594253 (23.82)	159860.1 (1.47)	10890389 (100)
2012-13	2374073 (19.79)	2688040 (22.40)	628654.2 (5.24)	21462.38 (0.18)	943702.6 (7.86)	4814107 (40.12)	115592 (0.96)	11997889 (100)
2013-14	2424907 (21.65)	2822829 (25.20)	734649.1 (6.56)	20748.72 (0.18)	1201315 (10.73)	3458684 (30.88)	148026.3 (1.32)	11199245 (100)

**Figure in parentheses is percentage share.*

(Contd...)

Average Annual Growth Rates- Income (Punjabi University)								
Year	Examination Fee	Registration Fee	Tuition Fee	Library	Miscella-neous	Grants from Punjab	Other Income	Total
P	0.944	0.943	0.726	0.815	0.919	0.17	0.81	0.973
t-values	(13.13)**	(12.67)**	(4.84)**	(6.44)**	(10.70)**	-0.792	(6.39)**	(19.51)**
P_1	0.971	0.945	0.964	0.912	0.913	-0.115	-0.224	0.91
t-values	(11.54)**	(8.15)**	-10.28	(6.30)**	(6.34)**	-0.327	-0.649	(6.21)**
P_2	0.865	0.911	-0.408	-0.257	0.484	0.37	0.568	0.897
t-values	(5.71)**	(7.34)**	-1.49	-0.884	1.83	0.214	2.29	(6.73)**

Source : Budgetary Reports of Punjabi University, Patiala (Various Issues).

Figures in parenthesis are t-value

**Significant at 1 per cent level, * Significant at 5 per cent level.

Table-6 : Sources of Revenue of Guru Nanak Dev University, Amritsar

Years	Examination Fee	Registration Fee	Tuition Fee	Income from Library	Miscella-neous Income	Grants from Punjab Government	Other Income	Total
1990-91	226331.8 (8.71)	24823.6 (0.95)	15551.69 (0.60)	1020.938 (0.04)	55049.48 (2.12)	2229861 (85.86)	2314771 (1.16)	2597104 (100)
1991-92	236640.6 (9.34)	28204.52 (1.11)	11928.64 (0.47)	1074.905 (0.04)	85930.93 (3.39)	2074593 (81.89)	2188736 (3.10)	2533372 (100)
1992-93	205197.9 (7.37)	48062.91 (1.72)	11578.32 (0.41)	821.3511 (0.03)	110751.5 (3.98)	2283378 (81.99)	2428375 (3.64)	2785057 (100)
1993-94	387840.3 (13.18)	79271.36 (2.69)	74855.46 (2.54)	1905.323 (0.06)	133510.5 (4.54)	2226428 (75.68)	2460818 (0.40)	2941685 (100)
1994-95	566523.1 (17.44)	173750.4 (5.35)	91976.59 (2.83)	1955.646 (0.06)	190745.6 (5.87)	2168871 (66.77)	2480273 (0.78)	3247999 (100)
1995-96	649604.9 (18.25)	132359.6 (3.72)	337152.4 (9.47)	3595.883 (0.10)	177804.4 (4.99)	2188085 (61.48)	2736738 (1.04)	3559209 (100)
1996-97	646151.9 (17.30)	118200.4 (3.16)	360533.2 (9.65)	3280.871 (0.09)	182764.9 (4.89)	2363832 (63.31)	2935750 (0.81)	3733816 (100)
1997-98	681858.1 (18.62)	117009.5 (3.19)	415079 (11.33)	2118.007 (0.06)	153966.6 (4.20)	2215790 (60.50)	2811176 (1.37)	3662206 (100)
1998-99	997931.8 (20.57)	19356.96 (0.40)	695049.1 (14.33)	3627.274 (0.07)	281930.6 (5.81)	2639176 (54.41)	3640936 (0.06)	4850207 (100)
1999-00	1176671 (21.97)	223589.1 (4.17)	1086335 (20.28)	2209.357 (0.04)	300002.8 (5.60)	2538265 (47.39)	3950353 (0.06)	5355885 (100)
2000-01	1308525 (24.47)	23346.28 (0.44)	1295938 (24.23)	2239.16 (0.04)	336776.6 (6.30)	2134675 (39.92)	3795560 (0.13)	5347054 (100)

(Contd...)

2001-02	1438851 (23.12)	308525.6 (4.96)	1806792 (29.03)	2980.305 (0.05)	500278.2 (8.04)	2138835 (34.37)	4469647 (0.05)	6223359 (100)
2002-03	1624498 (25.24)	300929.4 (4.68)	2071712 (32.19)	3484.129 (0.05)	476117.2 (7.40)	1920322 (29.84)	4493602 (0.05)	6435352 (100)
2003-04	1620348 (25.98)	335163.7 (5.37)	206920.5 (3.31)	1290.645 (0.02)	652834.1 (10.47)	1531945 (24.56)	2415102 (0.04)	6236854 (100)
2004-05	1656763 (24.30)	357439.8 (5.24)	2141047 (31.40)	891.02 (0.01)	649491.5 (9.52)	1981903 (29.06)	4798374 (0.08)	6818796 (100)
2005-06	1666190 (23.82)	371432.7 (5.31)	2282508 (32.63)	1123.211 (0.02)	764271.4 (10.93)	1875043 (26.81)	4948745 (0.09)	6994199 (100)
2006-07	1670031 (24.10)	403393.6 (5.82)	2419182 (34.91)	939.4284 (0.01)	781978.8 (11.28)	1611108 (23.25)	4846564 (0.13)	6929781 (100)
2007-08	1793346 (26.42)	424695.4 (6.26)	2314764 (34.10)	826.9218 (0.01)	806806.8 (11.89)	1394039 (20.54)	4549508 (0.28)	6787755 (100)
2008-09	2055298 (28.46)	4377919 (60.62)	2500881 (34.63)	735.0192 (0.01)	766381.4 (10.61)	1403497 (19.43)	4700455 (0.38)	7221889 (100)
2009-10	2150039 (29.84)	423078 (5.87)	2547716 (35.37)	491.5133 (0.01)	705626.9 (9.79)	1324669 (18.39)	4611765 (0.26)	7203843 (100)
2010-11	2925825 (32.47)	558322 (6.19)	3081346 (34.19)	806.7105 (0.01)	776394.8 (8.61)	1608020 (17.84)	5506626 (0.22)	9011854 (100)
2011-12	3462674 (31.73)	614150.4 (5.63)	3875728 (35.51)	675.1907 (0.01)	703310.2 (6.44)	2209412 (20.24)	6826475 (0.09)	10913679 (100)
2012-13	3752138 (32.53)	577916.5 (5.01)	3996654 (34.65)	653.375 (0.01)	902538 (7.82)	2239198 (19.41)	7179421 (0.22)	11535478 (100)
2013-14	3738397 (30.79)	545705.5 (4.49)	4234881 (34.88)	530.7018 (0.01)	1232876 (10.15)	987394.5 (8.13)	6489090 (11.27)	12142543 (100)

**Figure in parentheses is percentage share.*

Average Annual Growth Rates of Income in G.N.D.U Amritsar

Year	Examination Fee	Registration Fee	Tuition Fee	Library	Miscella-neous	Grant from Punjab	Other Income	Total
P	0.957	0.754	0.865	-0.651	0.953	-0.494	0.752	0.976
t-value	(15.113)**	(5.268)**	(7.897)**	(-3.925)*	(14.338)**	-2.603	(5.323)**	(20.419)**
P_1	0.961	0.015	0.957	0.636	0.93	0.358	0.325	0.977
t-value	(9.781)**	0.042	(9.319)**	2.333	(7.185)**	1.083	0.972	(12.984)**
P_2	0.934	0.405	0.606	-0.845	0.823	0.136	0.934	0.898
t-value	(8.664)**	1.469	2.524	(-5.236)**	(4.799)*	0.456	(8.672)**	(6.753)**

Source : Budgetary Reports of Guru Nanak Dev University, Amritsar(various Issues).
Figures in parenthesis are t-value
**Significant at 1 per cent level, *Significant at 5 per cent level

university has decreased from 85.86 per cent in 1990-91 to just 8.13 per cent and was found to be non-significant for the entire study period i.e., 1990-91 to 2013-14, pointing out that the state government is not fulfilling its responsibility of providing resources, resulting in financial crisis. The share of examination fee, registration fee and tuition fee increased from 8.71, 0.95 and 0.60 per cent in 1990-91 to 30.79, 4.49 and 34.88 per cent respectively. It is interesting to note that the maximum revenue in the case of GNDU is significantly contributed by the registration fee and it registered an average annual growth rate of 0.754 in the period P. It was observed that the average annual growth rates for examination fee was found to be highly significant in the period P as well as in P_1 and P_2 to the tune of 0.957, 0.961 and 0.934 per cent respectively, indicating that the gap between the contribution of state government and that from students has been decreasing continuously, resulting in increased financial burden on the students. The average annual growth rate of tuition fee was observed to be significant in the period P and P_1 with a growth of 0.865 and 0.957 per cent but found to be insignificant in period P_2.

It is further noted that the share of income from library has decreased and found to be negative and significant in the period P and P_2 to the tune of -0.651 and -0.845 per cent, indicating that a very negligible amount of income was obtained from library. The share of miscellaneous and other income was found to be significant throughout the study period, indicating that the university is finding other sources of income to meet its ever increasing expenditures.

Thus from the foregoing discussion, it is clear that the sources of revenue for the three universities are more or less same. Nonetheless, only Panjab University, Chandigarh is getting grants from both the centre and the state. The Central grants for Panjab University have been more or less consistent, contributing around 30 per cent to its total income. The Punjabi University, Patiala and Guru Nanak Dev University are getting grant-in-aid from state government only and its share has declined over the time period, resulting in universities being pressured to finding other ways to generate income to meet their ever increasing expenditure.

It is observed that the share of the examination fee, tuition fee and registration fee showed an increase with average annual growth rates being highly significant for the entire period P, i.e., 1991-91 to 2013-14 for all the three universities. The gap between the contribution of state government and that from students has been decreasing

continuously, indicating that the financial burden on students was growing every year. This adversely affected the brilliant but poor students, who may not be able to afford higher education. This clearly indicates that the higher education in Punjab is slowly slipping out of the hands of the common man.

Analyzing comparatively, the disparities in the income profile of the three universities, it was observed that the maximum hike in examination and tuition fee was found in the case of Guru Nanak Dev University whose average annual growth rate of examination fee and tuition fee were found to be 0.957 and 0.865 per cent during the overall period P, indicative of large number of self-finance courses being run by university.

The library and miscellaneous head's contribution to the total receipt was negligible in the case of all three universities it showing that authorities can opt for charging a genuine fee from its members, so that the contribution to university revenue can increase.

Main Sources of Expenditure for the State Universities –

The main channels of expenditure for the State Universities are –

- Expenditure on General Administration and Deans offices – includes expenditure on Vice-chancellor's office, University office, Dean, Student welfare, Dean, Academic Affairs and Dean, College Development Council office expenditure, which covers expenditure on salaries (contractual, temporary and permanent academic staff as well as security guards), contingencies, discretionary funds and computer, printer and maintenance, etc.
- Conduct of examination – includes remuneration to supervisory staff, contingencies, honorarium, overtime remuneration, daily wagers, examination furniture, legal expenses, cost of printing of answer sheets and question papers, expenditure incurred on flying squad etc.
- Teaching departments – includes the expenditure on salaries, contingencies and other maintenance expenditures of university teaching departments.
- Non-teaching departments – includes expenditure of press and publications, engineering department, landscape department, university hostel, university guest house, public relation, health center and estate.
- Allied teaching departments – includes expenditure of placement cell, alumni association, library, sport, computer centre, USIC, adult

and contingence centre, NSS, youth welfare and IQAC centre

- Improvement of education – includes central instrumentation facility, general travelling allowance and honorarium to experts for advice, syndicates, senate etc, holding of conferences, seminars, workshop, membership fee to some associations, scholarship, development of research work,TA/DA for attending conferences/seminar/workshop and for improving infrastructure etc.

- Miscellaneous expenditure - includes expenditure on gratuity, university medals, convocation, foundation day, other functions, publication of calendar, prospectus, annual reports etc., hospitality, reserve/pension fund, advertisement charges, training programmes, medical and dearness allowance for retirees etc.

Panjab University, Chandigarh

Table-7 depicts the share of expenditure components in total expenditure of Panjab University and average annual growth rates for the period P, P_1 and P_2. The total expenditure of Panjab University has increased over the year; it registered growth of 0.976 during entire study period. It is observed from the Table that the expenditure incurred by teaching departments consumes the major portion of the revenue of the university as the share remained more or less around 40 to 45 per cent during the year 1990-91 it was the hovering around 53.89 per cent.

This is also reflected in its significant growth rates not only during the entire period P but in P_1 and P_2 also. It is observed that during P_1 it was highest and significant around 0.937 per cent. The general administration and deans share in expenditure was also increasing continuously since 2007-08 which registered significant growth in the period P, P_1 and P_2 to the tune of 0.906, 0.947 and 0.878 respectively. Around 40.31 per cent and 36.57 per cent of total expenditure was done on the teaching and general administration and dean. The expenditure on conduct of examination remain more or less constant at around 7.50 per cent and was found to be highly significant in the period P and P_2, it registered maximum growth of 0.889 percent in the period of 2010 to 2014. The share of expenditure on non-teaching departments decreased from 13.92 in 1990 to 11.29 in 2013-14, but was found to be significant in the period P and P_1, but was observed to be non-significant in the period P_2 because its share in total expenditure decreased after 2010-11. The expenditure on allied departments was also found to be highly significant in the period P, P_1 and P_2 to the tune of 0.879, 0.830 and 0.847 per cent

Table-7 : Sources of Expenditure of Panjab University, Chandigarh

Year	General Administration and Dean	Conduct of Examination	Teaching Depts.	Non-Teaching Departments	Allied Departments	Improvement of Education	Miscellaneous Expenditure	Expenditure on Repayment of Loan	Total
1990-91	1089548 (21.37)	400354.6 (7.85)	2259564 (44.32)	709555.6 (13.92)	268865.6 (5.27)	37703.47 (0.74)	259583.9 (5.09)	73510.77 (1.44)	5098685.577 (100)
1991-92	955822.1 (19.47)	461935.8 (9.41)	2164251 (44.08)	601165.5 (12.24)	198313.6 (4.04)	30949.54 (0.63)	446190.6 (9.09)	51548.56 (1.05)	4910176.153 (100)
1992-93	1006158 (17.79)	499385.9 (8.83)	2360885 (41.74)	689638.8 (12.19)	305884.1 (5.41)	20162.95 (0.36)	726587.1 (12.85)	47071.69 (0.83)	5655773.367 (100)
1993-94	1057558 (18.97)	444087.5 (7.97)	2304692 (41.35)	823810.3 (14.78)	314033.2 (5.63)	13047.59 (0.23)	485986.1 (8.72)	130128.4 (2.33)	5573343.83 (100)
1994-95	1042464 (17.60)	420120.4 (7.09)	2706644 (45.68)	784570.2 (13.24)	259771.7 (4.38)	37446.46 (0.63)	525430.9 (8.87)	148482.5 (2.50)	5924929.79 (100)
1995-96	1084638 (17.80)	539513.7 (8.85)	2834775 (46.53)	811169.9 (13.31)	277336.4 (4.55)	37831.63 (0.62)	471608.6 (7.74)	35730.93 (0.59)	6092604.257 (100)
1996-97	1161814 (17.70)	518044.4 (7.90)	2836884 (43.21)	847089.6 (12.90)	337019.3 (5.13)	38995.11 (0.59)	791608.7 (12.06)	33155.54 (0.50)	6564610.84 (100)
1997-98	1366757 (19.57)	486431 (6.96)	3084754 (44.16)	940696 (13.47)	393193.7 (5.63)	40888.37 (0.58)	641409.9 (9.18)	31093.69 (0.44)	6985223.78 (100)
1998-99	1608536 (19.46)	540027 (6.53)	3766838 (45.59)	1071636 (12.97)	351930.7 (4.26)	50553.41 (0.61)	845377.1 (10.23)	28775.18 (0.35)	8263673.639 (100)
1999-00	1619877 (17.16)	679094.3 (7.20)	5085219 (53.89)	1012142 (10.72)	391444.3 (4.15)	51185.9 (0.54)	570100.6 (6.04)	27912.62 (0.30)	9436975.595 (100)
2000-01	1555547 (18.29)	650328.5 (7.65)	4198231 (49.36)	1047028 (12.31)	377771 (4.44)	45098.43 (0.53)	603483.3 (7.10)	26998.47 (0.32)	8504485.691 (100)
2001-02	1595469 (17.96)	581786.9 (6.55)	4318822 (48.61)	1027091 (11.56)	350313.1 (3.94)	36913.45 (0.41)	947041.2 (10.66)	26169.07 (0.29)	8883605.894 (100)
2002-03	1617015 (18.54)	519366.6 (5.95)	4286214 (49.15)	1046131 (11.99)	371644 (4.26)	34213.75 (0.39)	821227 (9.42)	25227.6 (0.29)	8721038.664 (100)
2003-04	1659261 (18.59)	593479.4 (6.65)	4281114 (47.97)	1085702 (12.16)	346141 (3.89)	37040.4 (0.41)	897492.9 (10.06)	24312.9 (0.27)	8924543.414 (100)
2004-05	1698651 (18.49)	598783.8 (6.52)	4348433 (47.32)	1160119 (12.62)	354991.9 (3.86)	36190.94 (0.39)	968274.9 (10.54)	23000 (0.25)	9188443.83 (100)
2005-06	1698170 (17.32)	695860.5 (7.10)	4302587 (43.89)	1522179 (15.53)	401093.6 (4.09)	28604.6 (0.29)	1131712 (11.54)	22068.7 (0.22)	9802275.264 (100)
2006-07	1864112 (17.40)	652159.9 (6.09)	4290525 (40.05)	1659083 (15.48)	342696.1 (3.20)	32751.54 (0.30)	1851388 (17.28)	20737.53 (0.19)	10713452.33 (100)

(Contd...)

2007-08	3613029 (34.29)	680482.4 (6.46)	4403849 (41.80)	1346010 (12.78)	432377.8 (4.10)	39751.25 (0.38)	1822745 (17.30)	19557.82 (0.18)	10535056.19 (100)
2008-09	3985758 (36.92)	628489.1 (5.82)	4485585 (41.56)	1269043 (11.76)	368838.4 (3.42)	38181.72 (0.35)	1689502 (15.65)	18034.97 (0.17)	10793930.42 (100)
2009-10	3922938 (32.89)	730021.1 (6.12)	5089684 (42.67)	1673142 (14.02)	446692.1 (3.74)	48648.66 (0.41)	1666532 (13.97)	17003.03 (0.14)	11928129.13 (100)
2010-11	10661056 (47.18)	780939.6 (3.46)	5760271 (25.49)	4803091 (21.260)	528602.7 (2.34)	46204.84 (0.20)	790353.7 (3.50)	15605.92 (0.07)	22595771.22 (100)
2011-12	5782746 (39.70)	776388.6 (5.33)	5772133 (39.63)	1654414 (11.36)	505775.8 (3.47)	59151.03 (0.41)	1413376 (9.70)	14383.99 (0.10)	14564992.63 (100)
2012-13	5223651 (36.28)	1060902 (7.37)	5891705 (40.93)	1636167 (11.36)	503826.6 (3.50)	66184.35 (0.46)	1374908 (9.55)	13429.87 (0.09)	14395866.32 (100)
2013-14	5460903 (36.57)	1179623 (7.90)	6019137 (40.31)	1685273 (11.29)	477399.7 (3.20)	95385.07 (0.64)	1273160 (8.53)	12609.65 (0.08)	14930331.23 (100)

** Figure in parentheses is percentage share.*

Average Annual Growth Rates-Expenditure (Panjab University)

Period	GA	Conduct of Exam	Teaching Expenditure	Non-Teaching	Allied Teaching	Improvement of Education	Miscella-neous	Loan and Advances	Total
P	0.906	0.879	0.926	0.83	0.847	0.638	0.821	-0.85	0.976
t-values	(9.83)**	(8.45)**	(11.26)**	(6.81)**	(7.30)**	(3.80)*	(6.59)**	-7.39	(20.59)**
P_1	0.947	0.785	0.937	0.946	0.815	0.722	0.404	-0.637	0.959
t-values	(8.30)**	(3.59)*	(7.61)**	(8.22)**	(3.99)**	2.95	1.25	-2.39	(9.60)**
P_2	0.878	0.889	0.895	0.597	0.847	0.824	0.434	-0.994	0.952
t-values	(6.08)**	(6.44)**	(6.65)**	2.47	(5.29)**	(4.82)*	1.6	-29.82	(10.30)**

Source : Budgetary Reports of Panjab University, Chandigarh (Various Issues)

Figures in parenthesis are t-value

**Significant at 1 per cent level, *Significant at 5 per cent level

respectively, indicating that its share remain more or less constant. While the share of expenditure on improvement of education and loan and advances decreased from 0.74 and 1.44 in 1990 to 0.64 and 0.08 per cent in 2014-15 respectively, indicating that very negligible amount was spent on improvement of education. It is observed from the Table that the expenditure on miscellaneous head also registered significant growth of 0.821 over the entire study period i.e., P, but was found to be non-significant in P_1 and P_2.

Punjabi University, Patiala

Table-8 shows the share of expenditure components and their average annual growth rates in the case of Punjabi university, Patiala. The total expenditure

of university increased over the year and was found to be highly significant during P with 0.953 growth rate, P_1 with 0.909 as well as in P_2 with growth of 0.910 per cent. It is observed from the Table related to this university that a major chunk of income was consumed by expenditure on teaching departments and was found to be highly significant throughout the study period as it registered average annual growth rate of 0.908 per cent in P, 0.821 per cent in P_1 and 0.870 per cent in P_2.

The share of expenditure on general administration and dean has declined from 22.23 per cent in 1990-91 to 15.17 per cent in 2013-14, but was found to be significant throughout the study period. The share of expenditure on conduct of examination was found to be more or less constant. The average annual growth rates for expenditure on non-teaching departments and allied teaching departments were observed to be highly significant in the period P as well as in P_1 and P_2 to the tune of 0.952, 0.745, 0.953 and 0.925, 0.897, 0.811 respectively. The average annual growth rate of expenditure on education was found to be significant throughout the study period at 0.904, but in absolute terms they registered a declining trend, indicating that the very negligible amount was spent on improvement of education by university.

Guru Nanak Dev University, Amritsar

Table-9 depicts the share of expenditure components in total expenditure and their average annual growth rates pertaining to Guru Nanak Dev University. The total expenditure of university has increased over the years and registered significant growth during the entire study period. Again in the case of GNDU also the major proportion of expenditure was done on the teaching departments, its share has increased from 30.65 per cent in 1990-91 to 32.39 per cent in 2013-14 and registered highly significant average annual growth in the period P as well as in P_1 and P_2, to the tune of 0.980, 0.936 and 0.924 per cent respectively. This implies inspite of the fact that there are vacant posts lying in the university and the majority of the teaching departments' expenditure is on salaries and paying pensions, which results in increased expenditure of teaching departments. The average annual growth rate of expenditure on general administration and dean offices was found to be highly significant in the period P and P_1 but non-significant in period P_2. While the share of conducting of examination remained more or less constant and was found to be highly significant in the period P and P_2 to the tune of 0.895 and 0.891 respectively. The expenditure on non-teaching departments were also found to

Table-8 : Sources of Expenditure of Punjabi University, Patiala

Year	General Administration and Dean	Conduct of Examination	Teaching Depts.	Non-Teaching Departments	Allied Departments	Improvement of Education	Miscellaneous Expenditure	Expenditure on Repayment of Loan	Total
1990-91	720521.6 (22.23)	255548 (7.88)	1116404 (34.44)	330845.3 (10.21)	230304.4 (7.10)	173982.4 (5.37)	33690.37 (1.04)	380157.3 (11.73)	3241454 (100)
1991-92	712566.4 (22.17)	253400 (7.88)	1115143 (34.70)	377506 (11.75)	240801.5 (7.49)	103284.2 (3.21)	30264.43 (0.94)	380552.4 (11.84)	3213517 (100)
1992-93	769260.5 (22.28)	292007.8 (8.46)	1109517 (32.13)	453681.3 (13.14)	264039.9 (7.65)	110319.7 (3.19)	28364.32 (0.82)	425447.6 (12.32)	3452638 (100)
1993-94	666529.2 (18.79)	252381.6 (7.12)	1109306 (31.28)	470065.2 (13.25)	263538.8 (7.43)	202785.1 (5.72)	29419.73 (0.83)	552258.8 (15.57)	3546284 (100)
1994-95	680198.2 (20.45)	248953.4 (7.48)	1106001 (33.25)	511490.7 (15.38)	254159.9 (7.64)	106468.7 (3.20)	24703.71 (0.74)	394326.1 (11.85)	3326301 (100)
1995-96	703939 (21.09)	317738.9 (9.52)	1177652 (35.29)	319176.4 (9.56)	243678.9 (7.30)	138844.8 (4.16)	29038.36 (0.87)	407120.1 (12.20)	3337189 (100)
1996-97	807920.8 (21.28)	276146.9 (7.27)	1277104 (33.64)	532962.3 (14.03)	274828.7 (7.24)	134758.3 (3.55)	23812.33 (0.63)	469198.5 (12.36)	3796731 (100)
1997-98	776656.6 (20.37)	253615.5 (6.65)	1299281 (34.07)	503901.8 (13.21)	298287.1 (7.82)	137687.4 (3.61)	27707.94 (0.73)	516045.5 (13.53)	3813182 (100)
1998-99	1175892 (25.58)	296244.9 (6.44)	1436455 (31.25)	653831.5 (14.22)	319720.9 (6.95)	186952.4 (4.07)	30739.13 (0.67)	496849.8 (10.81)	4596686 (100)
1999-00	1148309 (24.61)	271553.7 (5.82)	1661290 (35.61)	632948.7 (13.57)	324163.5 (6.95)	25520.36 (0.55)	27349.92 (0.59)	574431.5 (12.31)	4665567 (100)
2000-01	1090464 (21.55)	273268.6 (5.40)	1962177 (38.78)	682501.8 (13.49)	333278.5 (6.59)	107860.6 (2.13)	30593.03 (0.60)	579517.1 (11.45)	5059660 (100)
2001-02	1097548 (20.14)	371172.2 (6.81)	2103926 (38.61)	692670.6 (12.71)	354364.1 (6.50)	189921.5 (3.48)	44572.81 (0.82)	595460.1 (10.93)	5449635 (100)
2002-03	1057858 (20.18)	422193.3 (8.05)	1904524 (36.33)	689974.9 (13.16)	326835.4 (6.23)	202077.3 (3.85)	45964.81 (0.88)	592820.1 (11.31)	5242248 (100)
2003-04	1053094 (19.27)	321654.7 (5.88)	2081695 (38.09)	720422.6 (13.18)	365267.4 (6.68)	220053.7 (4.03)	38090.17 (0.70)	665190.4 (12.17)	5465468 (100)
2004-05	1116961 (19.80)	330534 (5.86)	1952631 (34.61)	756267.5 (13.40)	360000.1 (6.38)	216909.7 (3.84)	53953.15 (0.96)	854422.5 (15.14)	5641678 (100)
2005-06	1130169 (18.05)	333561.9 (5.33)	2008321 (32.08)	814133 (13.00)	392017.6 (6.26)	523473.6 (8.36)	65139.34 (1.04)	993630.9 (15.87)	6260446 (100)
2006-07	1132170 (16.77)	341487.8 (5.06)	2298281 (34.05)	794224.3 (11.76)	386450.8 (5.73)	879891.9 (13.04)	80607.46 (1.19)	835787.3 (12.38)	6748900 (100)

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2007-08	1239792 (16.20)	471923.5 (6.17)	2273140 (29.70)	892091.2 (11.66)	404769.9 (5.29)	794718.5 (10.38)	57490.95 (0.75)	1518991 (19.85)	7652918 (100)
2008-09	1259065 (18.32)	489630.6 (7.12)	2109217 (30.69)	941090.1 (13.69)	385483.3 (5.61)	726687 (10.57)	51119.2 (0.74)	910389.2 (13.25)	6872681 (100)
2009-10	1147298 (18.05)	354361.5 (5.57)	2012400 (31.66)	1120835 (17.63)	350600.5 (5.51)	451861.4 (7.11)	63966.46 (1.01)	855417.4 (13.46)	6356740 (100)
2010-11	1604732 (18.54)	361267.6 (4.17)	3160749 (36.53)	1520625 (17.57)	467601.1 (5.40)	75960.02 (0.88)	74664.17 (0.86)	1387747 (16.04)	8653345 (100)
2011-12	1817274 (15.90)	512089.2 (4.48)	5407865 (47.29)	1278889 (11.18)	451682.1 (3.95)	1886460 (16.50)	80364.33 (0.70)	0 (0.00)	11434623 (100)
2012-13	2405576 (18.57)	502074.2 (3.87)	6150223 (47.48)	1366224 (10.55)	516613.4 (3.99)	1922846 (14.84)	90635.03 (0.70)	0 (0.00)	12954191 (100)
2013-14	2302900 (15.17)	428689.9 (2.82)	7625576 (50.23)	1646653 (10.85)	706605.1 (4.65)	2329026 (15.34)	142450.2 (0.94)	0 (0.00)	15181900 (100)

*Figure in parentheses is percentage share

Average Annual Growth Rates- Expenditure (Punjabi University)

Period	GA	Conduct of Exam	Teaching Expenditure	Non-Teaching	Allied Teaching	Missella-neous	Improvement of Education	Missellaneous Expenditure	Total
P	0.908	0.832	0.899	0.952	0.925	0.725	0.904	0.904	0.953
t-values	(9.91)**	(6.87)**	(9.42)**	(14.27)**	(11.16)**	(4.82)**	(8.96)**	(8.95)**	(14.37)**
P_1	0.821	0.199	0.909	0.745	0.897	-0.306	0.043	0.729	0.909
t-values	(4.07)*	0.576	(6.18)**	3.15	(5.74)**	-0.909	0.123	3	(6.19)**
P_2	0.87	0.536	0.817	0.953	0.811	0.635	0.84	0.767	0.91
t-values	(5.85)**	2.103	(4.70)**	(10.38)**	(4.60)**	2.728	(5.13)**	3037	(7.27)**

*Source : Budgetary Reports of Panjabi University, Patiala (*Various Issues*)*

Figures in parenthesis are t-value

**Significant at 1 per cent level, *Significant at 5 per cent level.

highly significant in the period P and P_2 with average annual growth rates of 0.914 and 0.979 per cent, while the share of allied teaching departments and improvement of education has decreased from 10.22 and 0.99 per cent in 1990-91 to 4.62 and 0.78 per cent in 2013-14.

The proportionately small share was being spent on improvement of education. The expenditure on miscellaneous heads and others were found to be non-significant in the period P_1 and P_2 but found to be significant at 5 per cent in the period P with growth of 0.582.

On a comparative analysis, it was found that the expenditure on the salaries of teaching departments were consuming major chunk of revenue in all the three

Table-9 : Sources of Expenditure of Guru Nanak Dev University, Amritsar

Year	General Administration and Dean	Conduct of Examination	Teaching Department	Non-Teaching Departments	Allied Departments	Improvement of Education	Miscellaneous Expenditure	Expenditure on Repayment of Loan	Total
1990-91	680370.2 (27.32)	164812.2 (6.62)	763488.3 (30.65)	254565.6 (10.22)	376207.2 (15.10)	24657.92 (0.99)	99687.17 (4.00)	126742.7 (5.09)	2490531 (100)
1991-92	619419.9 (24.25)	187095.7 (7.32)	877701.9 (34.36)	285977.8 (11.19)	395266.1 (15.47)	27093.78 (1.06)	105524.4 (4.13)	56536.66 (2.21)	2554616 (100)
1992-93	769260.5 (19.60)	292007.8 (7.44)	1131608 (28.83)	262249.9 (6.68)	635642.3 (16.19)	41686.14 (1.06)	425447.6 (10.84)	367305.7 (9.36)	3925208 (100)
1993-94	666529.2 (17.09)	252381.6 (6.47)	1134002 (29.08)	238842.3 (6.12)	693816.2 (17.79)	38636.44 (0.99)	729757.4 (18.71)	145803.3 (3.74)	3899768 (100)
1994-95	694707.7 (21.61)	203904.3 (6.34)	1092375 (33.97)	251139.6 (7.81)	473178.9 (14.72)	29743.29 (0.92)	98042.29 (3.05)	372073.6 (11.57)	3215164 (100)
1995-96	745675.6 (20.11)	224822.1 (6.06)	1222280 (32.96)	279011.2 (7.52)	496736.4 (13.39)	28753.53 (0.77)	222973.1 (6.01)	488104.7 (13.16)	3708356 (100)
1996-97	840677.5 (22.25)	218956.4 (5.79)	1269532 (33.60)	283495.1 (7.50)	566307.6 (14.99)	25507.93 (0.67)	119436.7 (3.16)	454844 (12.04)	3778757 (100)
1997-98	856114.2 (23.78)	215480.2 (5.99)	1225606 (34.05)	304721.8 (8.47)	583154.8 (16.20)	36088.18 (1.00)	155050.4 (4.31)	223104 (6.20)	3599319 (100)
1998-99	1199335 (26.23)	232447.5 (5.08)	1400885 (30.63)	370328.8 (8.10)	742206 (16.23)	46406.86 (1.01)	276138.6 (6.04)	305267.1 (6.67)	4573015 (100)
1999-00	1107091 (21.28)	211229.3 (4.06)	1540694 (29.61)	738395.5 (14.19)	960592.4 (18.46)	45843.45 (0.88)	573489.6 (11.02)	25485.44 (0.49)	5202822 (100)
2000-01	1127680 (21.63)	253842.9 (4.87)	1738810 (33.35)	775959.2 (14.88)	987133.5 (18.94)	45926.75 (0.88)	258912.2 (4.97)	24650.78 (0.47)	5212915 (100)
2001-02	1687516 (27.42)	274675.9 (4.46)	2134454 (34.68)	482445.1 (7.84)	829949.1 (13.48)	98404.02 (1.60)	6380.589 (0.10)	641388.1 (10.42)	6155212 (100)
2002-03	1138939 (19.66)	291297.1 (5.03)	1889785 (32.61)	449900 (7.76)	846228.2 (14.60)	83235.44 (1.44)	477567.8 (8.24)	617286.4 (10.65)	5794239 (100)
2003-04	1191666 (20.78)	309693.8 (5.40)	1931641 (33.68)	422802.5 (7.37)	940249.5 (16.39)	108172.1 (1.88)	526003.1 (9.17)	305311.8 (5.32)	5735540 (100)
2004-05	1190087 (19.72)	304694.1 (5.05)	1994898 (33.05)	422046.8 (7.00)	973438.8 (16.13)	69784.72 (1.16)	658912.8 (10.92)	421942 (7.00)	6035804 (100)
2005-06	1248829 (18.57)	395791.6 (5.89)	2118451 (31.51)	476609 (7.09)	1019008 (15.16)	260323.7 (3.87)	730188.5 (10.86)	473647.1 (7.04)	6722847 (100)
2006-07	1244914 (19.68)	398981.2 (6.31)	2149660 (33.99)	444738.7 (7.03)	1022588 (16.17)	82692.43 (1.31)	753384.8 (11.91)	228000.2 (3.60)	6324959 (100)

(Contd...)

2007-08	1281997 (18.03)	391518 (5.50)	2236852 (31.45)	466898.9 (6.56)	1066966 (15.00)	586769.3 (8.25)	869970.3 (12.23)	210753.4 (2.96)	7111724 (100)
2008-09	1318282 (18.50)	391871.6 (5.50)	2268886 (31.84)	423584.1 (5.94)	1088896 (15.28)	554184.9 (7.78)	734595.2 (10.31)	344282.1 (4.83)	7124582 (100)
2009-10	1349355 (18.94)	384859.6 (5.40)	2758626 (38.73)	492560.3 (6.91)	1157313 (16.25)	112368.8 (1.58)	821734.2 (11.54)	45834.26 (0.64)	7122651 (100)
2010-11	1456876 (17.50)	379538 (4.56)	3304935 (39.70)	553832.6 (6.65)	1248176 (15.00)	45907.93 (0.55)	1224131 (14.70)	110998.8 (1.33)	8324396 (100)
2011-12	1484811 (16.64)	455758.1 (5.11)	3359654 (37.65)	506897.9 (5.68)	1225314 (13.73)	199150.9 (2.23)	1349660 (15.12)	343018.9 (3.84)	8924264 (100)
2012-13	1646838 (16.11)	520028 (5.09)	3550410 (34.73)	493392 (4.83)	1273784 (12.46)	180446.3 (1.76)	1745744 (17.08)	812416.8 (7.95)	10223058 (100)
2013-14	1552129 (14.02)	726252.9 (6.56)	3586431 (32.39)	511481.2 (4.62)	1257682 (11.36)	86502.69 (0.78)	1261244 (11.39)	2092190 (18.89)	11073911 (100)

**Figure in parentheses is percentage share*

Average Annual Growth Rates-Expenditure in G.N.D.U Amritsar

Year	GA & Deans	Conduct of Exam	University Teaching	Allied Teaching	Non-Teaching	Improvement of Education	Missellaneous Expenditure	Other Expenditure	Total
P	0.891	0.895	0.98	0.667	0.914	0.709	0.582	0.243	0.965
t-value	(8.990)**	(9.197)**	(22.719)**	(4.100)*	(10.352)**	(4.603)**	(3.284)*	1.149	(16.932)**
P_1	0.91	0.03	0.936	0.806	0.758	0.532	0.157	-0.379	0.812
t-value	(6.210)**	0.084	(7.521)**	(3.854)*	3.283	1.776	0.45	-1.157	(3.934)*
P_2	0.505	0.891	0.924	0.607	0.979	0.124	0.667	0.015	0.932
t-value	1.939	(6.495)**	(7.987)**	2.534	(16.087)**	0.414	2.97	0.05	(8.536)**

*Source : Budgetary Reports of Guru Nanak Dev University, Amritsar (*Various Issues*)*

Figures in parenthesis are t-value

**Significant at 1 per cent level, * Significant at 5 per cent level

universities. The share of expenditure of teaching departments in total expenditure was around 40.31 per cent in Panjab University, Chandigarh, 50.23 per cent for Punjabi University and 32.39 per cent for Guru Nanak Dev University. The average annual growth rates for expenditure on teaching department were found to be highly significant in all the three universities. The maximum hike in teaching expenditure was found in the case of Guru Nanak Dev University to the tune of 9.8 per cent over the entire study period P.

The other head of expenditure which was consuming second highest proportion of the total expenditure in all the three universities was the expenditure

incurred in the offices of general administration and deans, which has increased over the time period. Therefore it was found to be highly significant for three universities for the period P as well as in period P_1 and P_2, while the share of other departments remained more or less constant over the time period, but was found to be significant.

It is observed from the above results that the allied teaching departments consume small proportion of the income of the respective university and over the time its share in expenditure had decreased. A very little proportion of total expenditure in above three universities was on the improvement of education. It was just 0.64 per cent in Panjab University, 0.94 per cent in Punjabi University and 0.78 per cent in Guru Nanak Dev University during the entire study period P (1990-2014). The other heads of departments consumed a negligible share.

Conclusion

The obvious conclusion emerge from the above analysis is quite apparent that in the three major universities of Punjab, the State government grants have been inadequate and irregular. Generally, the grant-in-aid policies of the State government exhibit lack of concern for balanced expansion of university education in the State. As a result there exist inter-universities inequalities in financial provisions by the State government. The results also indicate that there is shortage of teaching staff in the universities. The faculty posts are being vacant and yet not filled. The recruitment of teaching faculty has not kept pace with the growth of enrollments, entailing great imbalance between student-teacher ratio. The results also revealed that there is tremendous incremental enrollment of students, yet there is shortage of infrastructural facilities, which hinder the quality of higher education in the State. The expenditure of universities is increasing day by day but revenue is more or less stable, resulting in deficit budget of universities. To overcome the deficit, universities have increased its tuition fee, examination fee and registration fee, which have adversely affected the careers of brilliant but poor students. In spite of this increase, the universities are facing lack of resources. Therefore it is required that the state government should adopt effective measures to mobilize financial resources and make effort to release grants and funds on priority basis so that this critical sector should not suffer on account of delay of grants. There is also a need to search alternative sources by the universities like increasing role of alumni or the contribution of corporate sector of financing higher education in the state.

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Contribution of Education to Income in Service Sector of Odisha : A Gender Perspective

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The objective is to evaluate the applicability of Jacob Mincer Model in a developing state like Odisha. One hundred and fifty samples from service sectors of Odisha were collected based on multi-stage sampling techniques using both structured questionnaire and schedule approach during June, 2017. Using Correlation, Regression and Mincer Model Approach, the results were drawn. In the case of service sector it can be concluded that education has higher impact on income, compared to experience. From the gender perspective, education has three times more impact on income for females compared to males. But years of experience had more impact on male income rather than female income. The research is undertaken at a point of time not over the time. The study overlooks dropout year or grade while measuring years of schooling, multiple source of income for average income calculation and experience from past non similar jobs in years of experience. Practical implications – Steps should be taken to make education more employment oriented. Education system should focus on imparting skills that are relevant to the industry. In India returns to education is researched mostly using secondary data. The current paper uses primary data to evaluate returns on education in Odisha.

Keywords : Education, Experience, Individual income, Mincer OLS Equation.

Introduction

Contribution of education to economic growth and development of a nation decides the amount of money devoted by the government and the individual to the sector. Early research has shown that education has the ability to influence individual income. A knowledgeable agriculturalist can take better advantage of existing programs and policies beneficial for his or her work. An educated industrial worker can benefit by using the acquired knowledge and skill in increasing his or her efficiency and productivity. A service holder with

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higher level of education can earn more by multi-tasking and better job opportunity. Education directly and indirectly influences the earning capacity of work force from all the three sectors of the economy.

Earnings typically increase with age (*Eckaus, 1963*) at a decreasing rate. Education increases the productivity of the service holders by increasing their efficiency level. It helps in developing the thought process and mental ability of the service holders. Education equips them for the competitive job market. It helps in swift handling of multiple tasks and at the same time increases the adaptability capacity of the service holders to changing technology. It helps to reduce the job related stress factors. It helps in balancing personal and professional life, to which education has a bigger and better role towards development of service sector.

Professional, skilled workers and able persons have positively skewed earning distribution (*Becker, 1962*). Many countries spend a huge share of their national income towards developing education sector. But India spends only three to four per cent of its national income towards education. The reason of low budgetary allocation to education is a matter of concern for all. Lower interest of government towards spending on education raises question on the contribution of education to income both at micro and macro level.

In the state of Odisha, service sector is the most dominant sector next to agriculture. Share of service sector to GSDP at current basic price is 43.53 per cent as per Odisha Economic Survey 2016-17. According to the report "The growth rate of services sector was averaging at 6.8 per cent from 2012-16 and has average share of 41 per cent of value addition. The sector is least volatile sector. Addressing the issues like human skill development, physical infrastructure can speed up service sector growth".

Review of Related Literature

As per a report of Computer Information System Company (*Hannon, et al, 2011*) pertaining to OECD countries, education facilitates in the development of cognitive, behavioral and social knowledge of an individual. Education helps in raising productivity of individuals working (*Goldin & Katz, 1999; Goldin & Katz, 2000; Goldin & Katz, 2001*). The economic returns to individuals from schooling increases with years (*Hansen, 1963*).

Gundlach (1994, 1997) stated that the scarcity of human capital is the cause of less use of physical assets. Quality human capital through education can exploit more physical assets and reduce poverty. As per convergence theories

every country needs to prepare itself to face advanced technological improvements (*Levin, 1998*). Education prepares the country to face it confidently (*Karatzia – Stavlioti & Lambropoulos, 2009*) in the fields of science and technology (*Bloom et el., 2006*). With growing pressure on natural resources and automation, man can produce more than he can consume because of education (*Lang, 1965*). *Solow (1957)* studied the US economy from 1909 to 1949 with respect to the shift in production function and its cause. He found that 87.5 per cent of the change was due to technical change. He included "improvements in the education of the labour force" as one of the factors for technical change. During liberalization, a country experiences higher technology transfers.

An increase in the relative demand for trained labour generates the advantage of trained over untrained labour (*Pissarides, 1997*). *Jones & Hatcher (1994)* based their theory on Marx's capitalist theory "to understand the nature of change in capitalist society, it is necessary not only to appreciate the nectar of technical progress, and the genuine advances that it offers to large groups of people, but also to calculate the costs of the modernizing project". Thus, an investment in the field of education can increase the receptive ability of the youth labour force.

Because of under-employment and unemployment, supply of unskilled labour is more elastic in the short run. *Curle (1964)* suggested there was a "high correlation between per capita income and the percentage of national income invested in education". Educated people considered education as a stepping stone for more jobs in competitive world (*Anosike, 1977*). Despite growth in the overall economy, during 1970's the wage and employment scenario of untrained labour suffered more compared to trained labour (*Pissarides, 1997*). The scarcity of skilled labour in turn fetches them better job opportunity. To exploit new opportunities, the nation needs a flexible labour force (*Aldcroft, 1998*) with quality education.

Design/Methodology/Approach of the Study

Objectives and Methodology of the Study

The specific objectives of the study are :

- To study the linear relationship between the variables,
- To fit the Mincer equation for the purpose of prediction, and
- To suggest some measures to improve the relationship between variables.

Data Collection Methods

Variables Used : The variables used to analyse the objective are the years of schooling (for education), years of experience (for experience) and average monthly income. Income is the dependent variable, and schooling and experience are independent.

Individual earning here refers to the average earnings received by the individuals over the last one year. The earnings were collected in monetary terms. No considerations were made for any financial adjustment like returning of loans or clearing of debts.

The net income in the case of business is taken into consideration. In order to calculate the total number of **years of schooling** the last qualified or passed level of schooling is considered. Drop out year or grade is not accounted for. Illiterate are those people who never went for any formal education.

Years of experience includes years spent in the current job along with earlier jobs in case of job change. The samples with job change are few in number and concentrating in service sector. But it does not include year's overlapping with years of schooling.

For Mincer equation along with variables of objective one, the square of years of experience is used to capture the non-linearity aspect.

Research Setting : The study selected the state of Odisha because it has huge potential for various service sectors. Service sector includes "(i) Trade, Hotels and Restaurants (ii) Transport, Storage, Communication and services related to broadcasting (iii) Financial Services (iv) Real estates, Ownership of dwellings and professional services (v) Public Administration and Defense (vi) Other services" as per Odisha Economic Survey 2016-17.

Sampling : Primary data from Odisha is used to substantiate the objectives. Multi-stage random sampling method is used to draw samples. The data is collected through both structured questionnaire and schedule method. The major problem that confront is the lack of time with the busy employees, who were unwilling to reveal their income. Collection of data from them was hectic.

Sample Unit : The sample unit used here is individuals engaged in work and receiving income. Employees from various grades were covered to get a more representative sample. The data is collected from both genders.

Sample Frame : A decent size of sample was decided upon based on the following formula :

$$n \geq \frac{(Z^2)(\rho)(1-\rho)}{(d)^2}$$

The formula is used when population size is more than 10,000 as in our case. Here :

n is minimum sample size

Z is value of standard normal distribution

ρ is the expected or probabilities of similar past studies

d is the maximum allowable deviation or error of the estimate.

The z value is 1.96 at 95 per cent confidence level ρ is taken as 9 per cent based on the findings of Tushar Agrawal's 2011 paper titled "Returns to Education in India : Some Recent Evidence" which calculated coefficient of schooling (as 8.5) using standard Mincerian wage equation using the data from the India Human Development Survey (IHDS) 2005. d is the margin of error which is taken as ±5%.

$$n \geq \frac{(1.96^2)(0.09)(0.91)}{(0.05)^2}$$

$$n \geq 125$$

Sample Size : One hundred and fifty employees, i.e., fifteen employees each from railway, post office, banking sector, education sector, health sector (Medical), real estate sector, IT and software, hotel and restaurants, communication and administrative section were selected for data collection by following non-probability sampling method.

Sampling Technique : The study areas were chosen from among the top 10 districts of Odisha based on the GDP of service sector for the year 2011-12. The districts were Khordha, Cuttack, Ganjam, Sundargarh, Baleshwar, Mayurbhanj, Kendujhar, Jajapur, Puri, and Balangir. Cuttack was picked via lottery. A survey was undertaken in Cuttack to locate an area where diversified service sectors were available for the robustness of data collection. In College Square area, almost all types of government offices, S.C.B Medical, Indian Railways and Ravenshaw University are located. Thus the area was justifiably selected.

Time Period : The survey was preceded by a pilot study in the form of a structured questionnaire initially distributed among 50 potential sample units and based on the feedback, a few changes were made. One of the prominent changes was replacing monthly income by average monthly income received in the last six month. Subsequently the final questionnaire was developed. The data collection process started during the summer month from 1st June 2017 and ended in 31st June 2017.

Method

Statistical Tools **:** The study used simple graphic method, measures of central tendency, dispersion, correlation, t test for correlation, regression and significance test for regression values. The study adopts Mincer model to show the non-linear relationship between variables.

Mincer Model : To substantiate the third objective, a standard Mincer's earning equation (Mincer, 1974) in the following form :

$$\ln Y_t = a + bS_t + cEx_t + dEx_t^2$$

S is the number of years of schooling of the individual *i* and Ex her / his years of labour market experience. In this function, the b coefficient on years of schooling can be interpreted as the average rate of return (or the percentage change in wages) to an additional year of schooling. The function assumes the rate of return to be the same for all levels of schooling. The experience variable is incorporated in the equation since an individual with higher experience in a job is likely to earn more.

The experience squared term captures the possibility of a non-linear relationship between earnings and experience, in the latter part of the job. The curve representing the impact of experience on earning is roughly belled shaped, initially increasing at increasing rate than at an diminishing rate. The dependent variable selected for the earning equation is the logarithm of the monthly earning.

The linear relationship between the variables

In the case of service sector the variability in income is due to schooling and experience. Females have much higher impact of predictors (0.463) on income level compared to men (0.15) which is almost thrice. About 21 per cent of the female income level is being determined by the schooling and work experience and only 18 per cent of the males [Table-1].

Table-1 : Regression Statistics for the Service Sector

Gender	Both	Female	Male
Multiple R	0.424	0.463	0.391
R Square	0.180	0.215	0.153
Standard Error	0.296	0.300	0.281
Observations	150	75	75

Source : Compiled by author based on primary survey.

All the service related regression equations are statistically significant. Approximately only one-eighth of the total variability in the data is being captured by the predictors (2.98 out of 16.5) [Table-2].

Mincer's Equation Approach

The Mincerian model for service sector of Odisha is:

$\ln Y_t = 3.652 + 0.039S_t + 0.015Ex_t + 0.000Ex_t^2$

Contribution of education to individual income is positive (+0.039) in the service sector. This means individual with higher education tends to earn more. This is because in many service sectors like government jobs, IT sector, banks etc., recruitment is made on the basis of education qualification. But the very low value (0.039) shows that a small portion of the salary/wage depends on education level. There are other factors that influence the pay scale other than education level. The other factors may be efficiency (which is indirectly influenced by education).

Years of experience has positive (+0.015) influence on income. This is because in public sector pay scale increases with increase in years of experience in the job. And in few private sectors like banks, financial services a similar trend is visible. The value is low (0.015) because the trend is not followed in many private sector. In the case of real estate sector, IT and software, hotel and restaurants, communication, years of experience has less influence on attracting higher income.

Table-2 : Anova for the Service Sector

Anova Service Sector	Sample 75+75 = 150	df	SS	MS	F	Significance F
Regression	150	3	2.985	0.995	11.346	9.05779E-07
Residual	150	145	13.594	0.088		
Total	150	149	16.580			
Regression	75 Female	3	1.839	0.613	6.827	0.00039508
Residual	75 Female	71	6.735	0.090		
Total	75 Female	74	8.575			
Regression	75 Male	3	1.0844	0.3615	4.5749	0.0053
Residual	75 Male	71	6.0049	0.0790		
Total	75 Male	74	7.0894			

Source : Compiled by author based on primary survey.

The square of experience (shows the impact of experience on income in the latter part of the job. It captures the non-linear aspect of the curve. In the service sector it is almost zero.

Gender Perspective

In a state where gender inequality exists in education sector (Mishra & Gartia, 2014), it becomes more important to study the contribution of education in increasing the earning capacity of an individual woman or man separately.

$\ln Y_t = 3.923 + 0.025S_t + 0.016Ex_t - 0.0002Ex_t^2$ (Male samples)

$\ln Y_t = 3.108 + 0.075S_t + 0.001Ex_t + 0.001Ex_t^2$(Female samples)

In Odisha, among the service holders education plays a more dominant role influencing income for woman (0.075) rather than of man (0.025). This might encourage more women in the near future to come forward and opt for higher education.

Years of experience has positive influence on income for both males (+0.016) and females (+0.001). Experience has extremely low impact on earning capacity for female samples, whereas it has slightly higher impact on male earnings. The negative square of experience for males shows that in the later years of service the earning of male samples fall. This might be due to age effect.

Conclusion

Education is considered as an item currently purchased that will produce benefits in future (*Taubman & Wales,* 1974). An individual would prefer to spend money and time on education only if the present value of the expected benefits from education exceeds that of the expected costs (*Becker,* 1993). Thus an important determinant of the demand for schooling is its expected benefits. In the case of employees in various service sectors, it can be concluded that education has a positive impact on income. The results favour woman education because the returns to year of schooling are triple for woman than for man.

Policy Suggestions

Bennett (1967) collected data from 70 nations and it was found that "vocational occupations where a large part of the curriculum is devoted to learning specific skills, which the student is to use immediately upon graduation. On the other hand, general education prepares the student in basic skills and equips students for the future". But vocational education was most highly correlated with the economic variables.

Steps should be taken to make education more employment oriented. Education system should focus on imparting skills that are relevant to the industry. For this the state government might set up a curriculum committee consisting of subject teachers, students both current and pass out, corporate HR recruitment team members and professor emeritus (*Mitra & Panda,* 2016). Skill Odisha is an excellent step undertaken by the state government in this regard and its success shall make education more output oriented than outcome based in Odisha.

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Corporate Social Responsibility (CSR) Reporting Practices of Indian Companies

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As Indian companies are striving to be more efficient in the competitive global business, they need to become equally proactive, accountable and transparent so far as their impact on the society and environment is concerned and this needs to be addressed by devising a holistic Corporate Social Responsibility (CSR) approach and motivating all the stakeholders involved in the business. There has been a tremendous progress and an influx of funding by the corporates in India to aid and uplift the Indian society. In the light of the many developments in the recent past and the rising emphasis on disclosure of business impact on the society and environment, the Ministry of Corporate Affairs enforced the Companies Act, 2013 and the CSR Rules from 1st April 2014. Companies with a net worth of ₹500 crore or more, or a turnover of ₹1,000 crore or more, or a net profit of ₹5 crore of more in a given fiscal year are required to comply with the provisions of the Companies Act, 2013 and the CSR rules. In this context, the objective of the present study is to analyse the compliance and practices of top BSE 100 companies with respect to the CSR Policy, CSR spending and the CSR reporting in the Directors' report/Annual report of the companies. From the study it is found that most of the companies have come up with an annual report in compliance with the Companies Act 2013 and the CSR Rules, and many with an annual report on CSR in the prescribed format which shows a focused approached by the Indian companies towards the disclosure of CSR activities.

Keywords : Corporate Social Responsibility (CSR), Companies Act 2013.

Introduction to Corporate Social Responsibility (CSR)

The relationship and interface between "Business" and "Society" have existed since the beginning of civilization. However, over the years they have undergone spectacular changes. The survival and effectiveness of any organizational entity depends on the quality of support it receives from its stakeholders and the society at large. Indian corporations, like those in other countries, have had a long tradition

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of being engaged in social activities that have gone beyond meeting a corporation's immediate financial objectives. The Corporate Social Responsibility (CSR) is a continuous commitment by the industry and business to behave ethically and contribute to economic development while improving the quality of life of the work force, their families as well as of the local community and the society at large. Businesses need a stable social environment that provides a predictable climate for investment and trade. Understanding society's expectation is, quite simply, enlightened self-interest for business in today's interdependent world. The CSR, therefore, will be centered on (a) fair and equitable treatment of employees (b) ethical operations and maintaining integrity, (c) respect for basic human values, (d) sustaining the environment for future generations and (e) being a caring neighbor in their communities.

CSR : Indian Scenario

The concept of modern CSR evolved only recently. However, the idea has a long history. Corporate's like the Tata Group, the Aditya Birla Group and Indian Oil Corporation, to name a few, have been involved in serving the community ever since their inception. In both the East and West, it was called social philanthropy. Traditionally, corporate philanthropy aimed at the welfare of the immediate members of the enterprise like staff and employees and their families. The first formal attempt by the Government of India to put the CSR issue as a mandate was the issuance of Corporate Social Responsibility Voluntary Guidelines in 2009 by the Ministry of Corporate Affairs (MCA, 2009).

The transition from a voluntary CSR regime to a regulated regime came when the Securities Exchange Board of India (SEBI) required the top listed 100 companies, as part of Clause 49 of the Listing Agreement, to mandatorily disclose their CSR activities in the Business Responsibility Reports (BR Reports) accompanying the Annual Reports.

The most ambitious attempt at mandated CSR activities for companies came with the enactment of Section 135 of the Companies Act 2013 (MCA, 2013). Section 135 made CSR spending as well as reporting mandatory for the very first time in India and brought the CSR activities of Indian corporate under the purview of corporate law.

CSR and Indian Companies Act, 2013

India's new Companies Act 2013 has introduced several new provisions which change the face of Indian corporate

business. One of such new provision is Corporate Social Responsibility (CSR). In India, the concept of CSR is governed by Clause 135 of the Companies Act, 2013, which was passed by both Houses of Parliament, and had received the assent of the President of India on 29 August 2013. The concept of CSR rests on the ideology of give and take. Companies take resources in the form of raw materials, human resources etc., from the society. By performing the task of CSR activities, the companies are giving something back to the society.

Ministry of Corporate Affairs has recently notified Section 135 and Schedule VII of the Companies Act as well as the provisions of the Companies (Corporate Social Responsibility Policy) Rules, 2014 (CRS Rules) which has come into effect from 1 April 2014.

CSR Committee and Policy

Every qualifying company requires spending of at least 2 per cent of its average net profit for the immediately preceding 3 financial years on CSR activities. Further, the qualifying company will be required to constitute a committee (CSR Committee) of the Board of Directors (Board) consisting of 3 or more directors. The CSR Committee is required to :

a) Formulate and recommend to the Board, a CSR policy which shall indicate the activities to be undertaken by the company as specified in Schedule VII;

b) Recommend the amount of expenditure to be incurred on the activities referred to it in clause (a);

c) Monitor the CSR policy of the company from time to time;

d) The format for disclosure of CSR policy and the activities therein as part of Board's report will be prescribed in the rules once the bill is enacted.

Review of Select Literature

- Srinivasan (2010) with reference to CSR and ethics in India studied the existing academic and popular Indian literature to identify responsible CSR practices in small-medium companies. The study highlighted that most of the studies done in India have been qualitative and exploratory in nature. The study revealed that small-medium companies are spread out geographically in India and contribute significantly to the economy.

- Chatterjee (2010) analysed the corporate governance practices of three prominent Indian companies Infosys Technologies Ltd., ITC Ltd., and Reliance Industries Ltd.

- Pradhan and Ranjan (2010) having observed that CSR is considered important by Indian companies irrespective of their size, sector and business goals, pointed out that companies adopted four different approaches to CSR in terms of good governance, ruinous CSR, discretionary CSR and illusion CSR. Alongside the authors have identified that eight factors which are the CSR drivers as philanthropic attitude, governmental actions, environmental concerns, ethical consumerism, crises and calamities, globalization and market force, social awareness and education and social expectation.

- Chamhuri Siwar and Harizan (2004) with reference to CSR practices in Malaysian business organizations point out that multinational companies brought more benefits to society in terms of employment generation, skill development and other community initiatives.

- Arora and Puranik (2004) in their study of the contemporary CSR trends in India found that most of the Indian corporates having benefitted from liberalization and privatization process in India has undergone transition from philanthropy to CSR but are lagging behind in rapid financial growth.

- D.Y. Chacharkar and A.V. Shukla (2004) citing the example of "iceberg effect" point out that large part of the CSR initiatives of a company is invisible to the company like publicity, image building, expanding customer base and profit. The only aspect visible to the company is the appreciation and recognition they receive for taking up CSR initiatives. R.S. Raman (2006) examined chairman's messages based on the Annual Reports of 50 Indian companies by using the content analysis technique to identify the nature of social reporting. He found that Indian companies place more importance on product improvement and in development of human resources.

- Conway (2003) stated that many large mining companies implemented their own initiatives towards environmental protection and social development. However, many small and medium companies lacked a proper structured policy and planning of CSR.

- Caroll (1998) in a study on 500 largest Indian companies found that around 49 per cent of the companies were reporting on various CSR activities like doing donations, school renovations in villages,

mid-day meals etc. Around 25 per cent of the companies were doing CSR activities for their employees. The study also revealed that many of the companies were making deceptive claims of doing CSR by making donations to charitable trusts or NGOs, sponsoring events etc. Such companies believed philanthropic acts are equal to CSR.

- Indian economy in post-liberalisation has grown in leaps and bounds and various industrial sectors have achieved rapid growth. Alongside CSR has become an important field to research upon. Various studies have been undertaken by researchers both in India and abroad.

- Khan and Atkinson (1987) observed that most of the Indian executives believed that CSR is relevant to business and felt that businesses have responsibilities towards other stakeholders.

Statement of Problem and Research Question

In the light of many developments in the recent past and the rising emphasis on disclosure of business impact on the society and environment, Ministry of Corporate Affairs, Government of India, enacted the Companies Act, 2013 and the CSR Rules from 1st April 2014. Companies with a net worth of ₹500 crore or more, or a turnover of ₹1,000 crore or more, or a net profit of ₹5 crore of more in a given fiscal year are required to comply with the provisions of the Companies Act, 2013 and the CSR rules. As per the CSR Rules 2014, any company coming under the above three determining criteria needs to comply with the Section 135 of the Companies Act 2013 and the year 2015 is the first year for the concerned companies to comply and report their CSR information as per the provisions. Therefore, it is the right time to raise the following research questions :

- To what extent Indian companies are involved in CSR activities as defined in the Companies Act 2013 and what are their governance practices towards CSR?

- Whether Indian companies are following the provisions of CSR Rules or not?

- What are the CSR reporting practices of Indian companies?

Objectives of the Study

- To analyze the compliance and practices of Indian companies with respect to governance of the CSR policy,
- To analyze the practices of CSR spending and the CSR reporting in the Directors' report/annual report of the Indian companies for the year 2015-16, and
- To analyze the CSR project management of the Indian companies for the year 2015-16.

Research Methodology

Documents Reviewed

As on 31st March 2016, we were able to access CSR policies and annual report of 98 companies. Annual reports of 2 companies are not accessible and are not covered in this survey. The annual report of 10 companies did not have the required information on CSR. Thus the analysis of CSR policies is for 88 companies and that of CSR spent is for 91 companies.

- The present study analyse the CSR policy, board of directors' annual report on CSR, and CSR spends of 100 companies.
- The CSR policy and annual report for the year 2015-16 for 100 companies were collected from the public domain.
- The CSR policy was analyzed for compliance with the Companies Act 2013 and CSR Rules 2014.
- The disclosure in the board of directors' CSR annual report was analyzed for compliance with the Companies Act 2013 and CSR Rules 2014.

Tools of Analysis

- The first tool used in the analysis is tabular and graphical depiction which would provide the depiction

Documents Reviewed	No. of Companies
CSR policy available in the public domain	98
Annual Reports	98
CSR disclosure in Annual Reports in the prescribed format	98
Number of companies disclosing prescribed CSR	88
Number of companies disclosing budgeted CSR	88
Number of companies disclosing actual amount of CSR spent	91

in terms of compliance and practices of Indian companies with respect to the CSR policy, CSR spending, CSR reporting in the Directors' report/annual reports and CSR project management of Indian companies.

- It is also relevant to ascertain the relationship of actual CSR expenditure with the three criteria as per the Companies Act 2013 i.e., Turnover, net worth and net profit of the company, the statistical tool used in the analysis is simple correlation and two way regression analysis to establish the significance of the data.

Limitations of the Study

- The survey data have been collected only from 100 listed companies. More companies could have been taken.
- The data have been analyzed quantitatively only.

Data Analysis and Interpretation

CSR Policy

The CSR Rules, 2014 made it mandatory for all the applicable companies to disclose the CSR Vision/Mission/ Philosophy in the CSR policy. The data presented in Table-1 show that 97 companies have disclosed their CSR vision/mission/philosophy in the CSR Policy. This shows that most of the company has a clear cut mission, vision and philosophy which in turn imply that their policies are not for mere showcasing.

Section 135 of the Companies Act 2013 lists out a set of CSR activities under Schedule VII to be covered by the companies. It may be seen in Table-2 which shows that only 5 per cent of the total companies undertake all the activities of CSR. Around 85 per cent of the companies undertake specific activities and the remaining

Table-1 : Availability of CSR Vision/Mission/Philosophy in CSR Policy

CSR Vision/Mission/Philosophy	Number of Company	Percentage
Yes	97	98.98
No	1	1.02
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-2 : Area of Intervention Covered in the CSR Policy

Area of Intervention Covered in CSR Policy	Number of Company	Percentage
All activities of Schedule-VII	5	5.10
Specific activities	84	85.71
Details not given	9	9.19
Total	98	100

Source : Authors Calculation from the Annual Reports.

9 per cent of the companies have not disclosed their details in the CSR policy. This shows that majority of the companies are complying with the CSR policy and provisions.

As per Rule 4 of Companies (CSR Rules) 2014, companies can implement their CSR activities either by building their own capabilities or exclusively through implementing agencies or both. Table-3 reveals that only 2 per cent of the companies implement their activities by their own and 1 per cent exclusively through implementing agencies. Around 82 per cent of the companies implement with both owners and implementing agencies and the remaining 14 per cent of the companies have not disclosed their details in the CSR policy.

Table-4 clearly illustrates that all the companies have disclosed governance structure details in their CSR policy. This indicates that the companies CSR policy have a clear set of corporate governance guidelines which assists, directs and advice its stakeholders.

Table-3 : Mode of Implementation Described in CSR Policy

Mode of Implementation	Number of Companies	Percentage
Exclusively by owner	2	2.04
Exclusively through other agencies	1	1.02
Both 81	82.65	
Details not given	14	14.29
Total 98	100	

Source : Authors Calculation from the Annual Reports.

Table-4 : Details of Governance Structure in CSR Policy

Governance Structure	Number of Companies	Percentage
Yes	98	100
No	0	0
Total	98	100

Source : Authors Calculation from the Annual Reports.

As per Rule 6 of the Companies (CSR Rules) 2014, the CSR policy of the company shall specify that the surplus arising out of the CSR projects or programs or activities shall not form part of the business profit. It can be transferred to CSR fund. The data presented in Table-4 indicates that around 95 per cent of the total companies have not shown the treatment of surplus arising from CSR activities and the remaining 5 per cent has transferred such surplus to the CSR fund.

Rule 6 of the Companies (CSR Rules) 2014 mandate for all the companies to disclose the details of the monitoring framework in their CSR policy. As per the accompanying Table-6 only 24 per cent of the total companies comply with the prescribed provision and the remaining 76 per cent are not disclosing the monitoring framework details in their CSR policy which in turn distorts transparency and reliability.

Rule 5 of the Companies (CSR Rule) 2014 deals with CSR committees. As per Rule 5, it is mandatory for all the companies to disclose the details of CSR committees in their CSR policy. The above figure shows that around 98 per cent of the total companies disclose

Table-5 : Treatment of Surplus Arising from CSR Activities

Treatment of Surplus	Number of Companies	%
Yes	0	0
No	93	94.90
Surplus to be transferred to CSR fund	5	5.10
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-6 : Details of Monitoring Framework in the CSR Policy

Monitoring Framework	Number of Companies	Percentage
Yes	24	24.49
No	74	75.51
Total	98	100

Source : Authors Calculation from the Annual Reports.

the required details in their CSR policy and the remaining 2 per cent are not complying with the provision.

CSR Committee

As per Section 135(2) read with Rule 8, the Board's report of a company covered under CSR Rules shall disclose the composition of the CSR Committee under sub-section (3) of Section 134 and Rule 9 of the Companies (CSR) Rules 2014, mandate that all the companies to place its CSR policy on its website, if any. Table-8 shows that around 93 per cent of the total companies are complying with the required CSR obligation and the remaining 7 per cent fails to disclose the CSR committee composition details in their annual reports.

Table-7 : Details of CSR Committee in CSR Policy

CSR Committee	Number of Companies	Percentage
Yes	96	97.96
No	2	2.04
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-8 : Companies Disclosing Composition of their CSR Committee in their CSR Annual Reports

Composition of CSR committee	Number of Companies	Percentage
Yes	92	93.88
No	6	6.12
Not available	0	0
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-9 shows that around 33 per cent of the total companies have 3 members in their CSR committee, 61 per cent comprise more than 3 members and the remaining 6 per cent companies have not disclosed the detail in their annual reports.

It is seen from Table-10 that around 95 per cent of the total companies outline the role of their CSR policy in their annual reports and the remaining 5 per cent are not outlining their CSR policy role.

Law is discreetly silent with respect to the number of CSR committee meetings held in a year, and thus it depends on the requirement of the company. However, there is no restriction if CSR committee meeting conduct business by circulation. It may be seen in Table-11 that 12 per cent of the companies conducted three meetings in a year, 43 per cent conducted less than three meetings, 15 per cent of the companies conducted more than three meetings and 28 per cent of the companies have not disclosed their details.

Table-9 : Number of Members in the CSR Committee

Number of Members in CSR Committee	Number of Companies	Percentage
Three	32	32.66
More than three	60	61.22
Not available	6	6.12
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-10 : Companies Outlining the Role of their CSR Policy in their Annual Reports

Role of CSR Policy	Number of Companies	Percentage
Yes	93	94.90
No	5	5.10
Total	98	100

Source : *Authors Calculation from the Annual Reports.*

Table-11 : Number of CSR Committee Meeting held in a Year

Number of CSR Committee Meeting Held in a Year	Number of Companies	Percentage
Three	12	12.24
Less than three	43	43.88
More than three	15	15.31
Not available	28	28.57
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-12 : Disclosure of CSR in Director's Report

Disclosure of CSR in Director's Report	Number of Companies	Percentage
Yes	78	79.59
No	20	20.41
Total	98	100

Source : Authors Calculation from the Annual Reports.

Disclosure of CSR in Director's Report

As per Section 135(4) of the Companies Act 2013, the Board of every company in which CSR provisions are applicable shall disclose the content of such CSR policy in its report and also place it on the company's website, if any, in such manner as may be prescribed. The data in Table-12 highlights that a majority of the company comprising 80 per cent comply with the prescribed CSR obligation and the remaining 20 per cent fail to disclose CSR policy in their Director's Report.

Table-13 shows that nearly 80 per cent of the companies are disclosing their CSR mission/vision/philosophy in their Director's Report and the remaining 20 per cent are not disclosing their mission/vision/philosophy in the Director's Report.

Table-13 : Companies Disclosing CSR Mission/Vision/ Philosophy in Director's Report

CSR Mission/Vision/Philosophy in Director's Report	Number of Companies	Percentage
Yes	79	80.61
No	19	19.39
Total	98	100

Source : Authors Calculation from the Annual Reports.

Law is silent with respect to reference of the CSR committee in Director's Report. However, the accompanying Table-14 shows that nearly 78 per cent of the total companies are referring to CSR committee in Director's Report with a view to ensure transparency and clarity and the rest 22 per cent are not complying with the required provision.

The report of the Board of Directors attached to the financial statements of the company need to include in the annual report on CSR in the format prescribed in the CSR Rules setting out inter alia a brief outline of the CSR policy and the prescribed CSR expenditure. A perusal of Table-15 points out that 77 per cent of the companies

Table-14 : Reference to CSR Committee in Director's Report

Reference to CSR Committee in Director's Report	Number of Companies	Percentage
Yes	76	77.55
No	22	22.45
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-15 : Details of Amount Spent on CSR in the Director's Report

Details of Amount Spent on CSR	Number of Companies	Percentage
Yes	75	76.53
No	23	23.47
Total	98	100

Source : Authors Calculation from the Annual Reports.

comply with the required CSR provision and the rest 23 per cent fails to comply with it.

Table-16 clearly illustrates that around 80 per cent of the companies are disclosing their areas of intervention in the Directors Report and the remaining 20 per cent fails to comply with the prescribed CSR provision.

Table-15 shows that nearly 77 per cent of the companies are disclosing the details of people impacted in the Director's Report whereas 23 per cent companies are not clearly disclosing their stakeholders.

Section 135 of the Companies Act 2013 mandate that all the companies to disclose their CSR policy in Director's Report. Out of 98 companies, only 86 per cent has disclosed their CSR policy in the Director's Report and the remaining 14 per cent are not complying with the provisions.

Table-16 : Details of Focus Area of CSR Intervention in Director's Report

Area of CSR Intervention	Number of Companies	Percentage
Yes	78	79.59
No	20	20.41
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-17 : Details of People Impacted

Details of Outreach	Number of Companies	Percentage
Yes	75	76.53
No	23	23.47
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-18 : Reference to CSR Policy in Director's Report

Reference to CSR Policy in Director's Report	Number of Companies	Percentage
Yes	84	85.71
No	14	14.29
Total	98	100

Source : Authors Calculation from the Annual Reports.

CSR Spending

Table-19 points out that of the 98 companies under study, 88 companies disclosed the prescribed CSR expenditure in their annual reports as per the prescribed format. Only 10 companies have not disclosed it.

With regard to the budgeted amount of CSR expenditure, of the 98 companies, 88 companies have disclosed in their annual reports as per the prescribed format and the remaining 10 companies have not disclosed.

While on the actual amount of CSR expenditure, the accompanying Table-19 reveals that 91 out of 98 companies disclosed the actuals and the balance 7 have not disclosed.

Table-19 : Prescribed CSR Expenditure

Prescribed CSR Expenditure	Number of Companies	Percentage
Yes	88	89.80
No	10	10.20
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-20 : Budgeted CSR Expenditure

Budgeted CSR Expenditure	Number of Companies	Percentage
Yes	88	89.80
No	10	10.20
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-21 : Actual CSR Expenditure Spent

Actual CSR Expenditure Spent	Number of Companies	Percentage
Yes	91	92.86
No	7	7.14
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-22 : CSR Budget Outlay against Prescribed CSR Expenditure

Budgeted CSR against Prescribed CSR Limit	Number of Companies	Percentage
Higher	24	27.27
Equal	52	59.09
Lower	12	13.64
Not available	10	10.20
Total	98	100

Source : Authors Calculation from the Annual Reports.

For 59.09 per cent of the total companies, the budgeted CSR is equal to the prescribed CSR limit, 27.27 per cent companies have higher budgeted CSR as compared to the prescribed limit,13.64 per cent of the total companies have lower budgeted CSR as compared to the stipulated limit and the rest 10.20 per cent has not disclosed the required details.

For 39.77 per cent of the total companies, the actual amount spent on CSR is equal to the prescribed CSR, 35.23 per cent companies have spent higher amount of CSR as compared to the prescribed CSR, 25 per cent of the total companies has spent lower amount as compared to the stipulated CSR and the rest 10.20 per cent has not disclosed the required detail.

Section 135 of the Companies Act, 2013 states that if the company is unable to spend the minimum required expenditure, the company has to give the reasons in the Board report for non-compliance so that no penal provisions are attracted by it. As per Table-24, nearly 30 per cent of the

Table-23 : Actual Amount Spent against Prescribed CSR Limit

Amount Spent against Prescribed CSR	Number of Companies	Percentage
Higher	31	35.23
Equal	35	39.77
Lower	22	25
Not available	10	10.20
Total	98	100

Source : Authors Calculation from the Annual Reports.

Table-24 : Reasons for not Spending the Prescribed CSR Limit

Reasons for Not Spending the Prescribed CSR Limit	Number of Companies	Percentage
Yes	22	22.45
No	8	8.16

Source : Authors Calculation from the Annual Reports.

total companies spent less than 2 per cent of the average net profit for the immediately preceding three financial years, i.e., the prescribed CSR limit. Of the 30 per cent companies, 22 per cent has disclosed the reason for not spending the prescribed CSR limit and the remaining 8 per cent failed to comply with the prescribed CSR compliance.

CSR Spending by Top 20 Companies

Out of the top 20 companies, majority of the companies spent more than the prescribed CSR amount. This shows that the Indian companies are not restricted to spend only 2 per cent of the average net profit of last three years. They are more interested towards their Corporate Social Responsibility.

Table-25 : Top 20 Companies with Actual CSR Spent (₹ Cr.) FY 2015-16

S.No.	Name of the Company	Prescribed CSR (Cr.)	Actual CSR Spend (Cr.)	Actual CSR Spend in %
1	Tata Consultancy Service	360.00	360.00	100
2	Reliance	0.62	0.70	112.67
3	HDFC Bank	248.00	194.81	78.55
4	ITC	246.76	247.50	100.30
5	Oil and Natural Gas Corporation Ltd.	593.70	421.00	70.91
6	Infosys	256.01	202.30	79.02
7	HDFC	139.26	85.70	61.54
8	State Bank of India	Not available	143.92	Nil
9	Coal India Ltd.	19.69	19.69	100.00
10	Hindustan Unilever Ltd.	91.94	92.12	100.20
11	Indian Oil Corporation Ltd.	161.11	156.68	97.25

(Contd...)

12	Tata Motors Ltd.	1.48	1.80	121.62
13	Maruti Suzuki	65.40	65.40	100.00
14	ICICI Bank	4.76	4.76	100.00
15	Sun Pharma	Not available	11.65	Nil
16	NTPC	271.35	491.80	181.24
17	Kotak Mahindra	47.33	16.41	34.67
18	Bharti Airtel	189.00	189.00	100.00
19	Larsen & Toubro Ltd.	101.46	119.89	118.16
20	Hind Zinc	Not available	Not available	Nil

Source : Authors calculation from the Annual Reports.

Of the total companies, the non-government companies spent more towards Corporate Social Responsibility in comparison to government companies.

Out of the total companies, the amount spent by both manufacturing and non-manufacturing companies decreased in 2016 as compared to 2015.

Table-26 : Actual Amount Spent on CSR by Types of Company (Government and Non-Government Companies)

Companies	2015	2016	Change (increase/decrease)	% change
Government Companies	2212.77	2518	305.23	13.79
Non-government Companies	2977.98	3608.68	630.7	21.18

Source : Authors calculation from the Annual Reports.

Table-27 : Actual Amount Spent on CSR by Nature of Company (Manufacturing and Non-Manufacturing Companies)

Companies	2015	2016	Change (increase/decrease)	% change
Manufacturing	3537.75	1337.86	-2199.89	-62.18
Non-manufacturing	1668.61	1090.51	-578.1	-34.65

Source : Authors Calculation from Annual Reports.

However, the decrement is more in manufacturing companies in comparison to non-manufacturing companies.

The above study shows that around 99 per cent of the prescribed CSR amount is actually spent in 2016

Table-28 : Actual CSR Spend to Prescribed CSR

Actual CSR Spend to Prescribed CSR	2016
Prescribed CSR (cr.)	5990.37
Actual CSR spend (cr.)	5925.05
Actual CSR spend in percentage (to prescribed CSR)	98.91

Source : Authors Calculation from Annual Reports.

Table-29 : Sector-wise Performance (Actual CSR Spent in %, FY-2015-16)

Sector	Number of Companies	Prescribed CSR (cr.)	Actual CSR Expenditure (cr.)	Actual CSR Expenditure in %
Banking and Finance	16	934.82	797.42	85.30
Chemical & Fertilizers	Nil	Nil	Nil	Nil
Computer (Hardware and Software)	4	894.14	840.43	93.99
Pharmaceuticals	7	207	209.69	101.30
Oil, Drilling & Refinery	8	1156.73	1094.57	94.63
Steel (all)	3	258.42	331.56	128.30
Infrastructure	4	263.56	245.26	93.06
Construction	3	77.76	108.56	139.61
Engineering	6	326.56	368	112.69
Auto & Ancillary	8	257.63	248.2	96.34
Textile	1	15.82	15.82	100.00
Telecommunication	5	311.4	311.48	100.03
Others	23	1286.52	1488.02	115.66
Total	88	5990.36	6059.01	101.15

Source : Authors Calculation from Annual Reports.

and only 1 per cent is unspent. This indicates that the Indian companies have indulged in good CSR practices.

Based on the sector-wise performance, the inference drawn is that the construction sector has performed best among all other sectors. Other sectors such as engineering, steel and pharmaceutical have also spent more than the prescribed CSR amount.

Out of 98 companies, 96 companies have focused primarily on the promotion of education. Environmental sustainability and contribution to Prime Minister's relief fund and other such state and central funds has also availed by majority of the companies.

Major Findings

CSR Policy

- Out of the 98 companies, 97 companies have disclosed their CSR vision/mission/philosophy in CSR policy.
- Majority of the sample companies undertakes certain specific CSR activities prescribed under Schedule VII.
- Out of the total companies,83 per cent implement their CSR activities by both owners and implementing agencies.
- All the companies have disclosed their governance structure in the CSR policy.

Table-30 : Activity/Project/Theme-wise CSR Spend (₹ cr.)

S.No.	CSR Activities Undertaken by the Companies	No. of Companies	%
1	Promotion of education	96	97.96
2	Eradication of extreme hunger and poverty	34	34.69
3	Gender equity and women empowerment	28	28.57
4	Reducing child mortality and improving maternal health	67	68.37
5	Combating HIV-AIDS, malaria and other diseases	27	27.55
6	Contribution to Prime Minister's relief fund and other such state and central funds	25	89.29
7	Social business projects	24	24.49
8	Employment enhancing vocational skills	38	38.78
9	Environmental sustainability	83	84.69

Source : Authors Calculation from Annual Reports.

- Out of the total samples, 95 per cent of the companies have not disclosed the treatment of surplus arising from the CSR activities.
- Majority of the companies have not disclosed the details of monitoring framework in their CSR policy.
- Out of the 98 companies, 96 companies have disclosed the details of CSR committee in CSR policy.

CSR Committee

- Out of the 98 companies, 92 companies have disclosed the composition of their CSR committee in CSR annual reports.
- Majority of the companies have more than three members in their CSR committee.
- Ninety three companies have outlined the role of their CSR policy in the annual reports.
- Majority of the companies conducted less than three CSR committee meetings in a year.

Disclosure of CSR in Director's Report

- Majority of the companies have disclosed CSR in their Director's Report.
- Out of 98 companies, 79 companies have disclosed their CSR vision/mission/philosophy in their Director's Report.
- Seventy six companies have provided reference to CSR Committee in the Director's Report.
- Majority of the companies have provided the details of amount spent on CSR in Director's Report.
- Out of 98 companies, 78 companies have disclosed the focus area of CSR intervention in the Director's Report.
- Majority of the companies have disclosed the details of people impacted in their Director's Report.
- Eighty four companies referred to CSR policy in their Director's Report.

CSR Spending

- Out of 98 companies,88 companies have disclosed the prescribed and budgeted CSR expenditure.
- Out of 98 companies, 91 companies have disclosed the actual CSR expenditure.
- The CSR budget outlay of majority of the companies is equal to the prescribed CSR limit.
- Majority of the companies have spent amount equal to the prescribed CSR, i.e., 2 per cent of the

average profit of last three preceding financial years.

- Only 22 companies have disclosed the reason for spending the prescribed CSR limit in their Annual Reports.

CSR Spending by top 20 Companies

- Out of the top 20 companies, majority of the companies spent more than the prescribed CSR amount.

Amount Spent on CSR by Types of Company

- The non-government companies spent more towards CSR in comparison to government companies.

Amount Spent on CSR by Nature of Company

- The non-manufacturing companies spent more towards CSR in comparison to manufacturing companies.

Actual CSR Spend to Prescribed CSR

- Ninety nine per cent of the prescribed CSR amount is actually spent in 2016.

Sector-wise Performance (Actual CSR Spent in Percentage FY- 2015-16)

- The construction sector has performed the best as compared to the other sectors.

Activity/Project/Theme-wise CSR Spending

- Out of 98 companies, 96 companies have focused primarily on the promotion of education.

Suggestions and Conclusion

Suggestions

Companies should be encouraged to fully disclose their composition, meetings and spending in their annual reports. Companies should realize the importance of CSR as it enhances their brand image, improves financial performance, increases sales and customer loyalty.

Conclusion

Corporate Social Responsibility is an evolving process and not an end. CSR has become one of the standard business practice. For companies, the overall aim is to achieve a positive impact on society as a whole, while maximizing the creation of shared value for the owners of the business, its employees, shareholders and stakeholders. Thus, for companies committed to CSR has an enhanced overall reputation – a powerful statement of what they stand for in an often cynical business world.

The Companies Act, 2013 is a good initiative on the part of the government, however, what component to be included in 'spending' on CSR is unclear

and is left to the discretion of the companies to decide. A key challenge facing business is the need for more reliable indicators of progress in the field of CSR, along with the dissemination of CSR strategies.

There is a need for creation of awareness about CSR amongst the general public to make CSR initiatives more effective. This effort will also motivate other corporate houses to join the league and play an effective role in addressing issues such as access to education, health care and livelihood opportunities for a large number of people in India through their innovative CSR practices.

It is difficult for one single entity to bring about change, as the scale is enormous. Effective partnerships between corporate, NGOs and the government will place India's social development on a faster track. What is commendable is the spirit with which India has made her corporates socially responsible and in that, led the world's most developed nations.

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