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Contents

Role of Infrastructure in Value Addition to Management Education: An Empirical Study

SISTU V.S.N. MURTHY AND SUNIL KUMAR

India offers facilities of education and training in all aspects of human creative and intellectual endeavours like arts and natural humanities, mathematics, social sciences, engineering, medicine, commerce and management. It also possesses a highly developed business education system. The primary objective of this paper is to study the effect of available facilities in affiliated colleges to add value in learning, with regard to library, government support and getting proper amenities for staff. The study reveals that there is a significant association between the facilities and the involvement of faculty.

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1. Introduction

There is a growing concern that many of the skills and qualities associated with management education are inhibited by the traditional formal education system. There is a need to understand the relationship between availability of facilities in business education colleges and transfer of technology and ideas for business development. Qualified faculty, infrastructural facilities such as fully equipped library, databases and teaching aids are the basic needs of business colleges. Availability of these facilities is being monitored by the concerned governing bodies like respective universities, University Grants Commission (UGC), National Assessment and Accreditation Council (NAAC), All India Council for Technical Education (AICTE), and so on. This paper discusses the availability of these facilities in colleges and how effectively the faculty and students are using them.

The framework of business educational institutions consists of universities established by an Act of Parliament (central universities) or the State Legislature (state universities), or institutions that have been accorded the status of a university with the authority to award their own degrees through central government notification (deemed universities). The main agencies that accredit universities and colleges in business education are NAAC, AICTE and UGC.

2. Review of Literature

There is a lack of acceptable and reliable standards of accreditation in India. Being the organization responsible for defining the basic framework for quality of business education, and approving entry and expansion of all institutions rather than promoting the development of more promising institutes, the AICTE focuses more on taking punitive measures on institutions for grant of approval. Management is treated as a sub-department of

engineering by AICTE, rather than recognizing that management itself has its demands that require exclusive attention (Noronha, 2011). As in the case of business and industry, the education sector is discovering the need for talent in business and management to meet the new quality standards demanded by the society and the next generation. The three pillars of any higher education institution are: quality of faculty, infrastructure facilities and learning environment. With the increasing demand–supply gap, organizations are facing dearth of experienced talent. Like business and industry, the field of education too is discovering the need for talent so as to meet the new quality standards demanded by the society and is also facing leadership crisis. Business schools need to understand that talented faculty is a resource and they need to construct talent management strategies considering relative importance of various factors similar to the practices in corporate (Agrawal, 2010).

Business schools are like walking on a tightrope between the academic and the practitioner side of business. In reaction to early criticism of business schools being trade schools, the schools have now emphasized the academic nature of business education. The pendulum has now moved towards greater inclusion of real-world experience. As a result, many business schools are hiring business practitioners as faculty. One concern regarding use of practitioners, especially lower level executives, is that they may teach how their specific organization operates rather than concepts and theories that apply to a variety of organizations. To increase relevance in their programmes and to fill faculty vacancies in the face of shortages of doctoral qualified faculty, many schools of business are turning to business practitioners, or executive professors, to teach (Clinebell, 2008).

In the beginning of the year 2007, while many good business schools have initiated new plans, the quality of majority of the institutions still lies far below the desired level. At the most basic level, in a very traditional manner, structural deficiencies like educational infrastructure, lax standards, absence of strict norms and so on, do exist in majority of the colleges, whether affiliated or university colleges. The need for improvement arises because expectations are increasing manifold with more and more unfolding opportunities of management education. Global management institutions must consider the context of quality and assessment as a guide to planning and leading for ultimately answering future calls to reform. This would enhance focus on students, continuous improvement, transparency, responsible leadership and global preparedness. Though this is a tough task, fortunately, Indian management education and its leadership are opening up to realities and are in the pursuit of bold initiatives (Sahay, 2007).

Business school accreditation is a quality assurance scheme that certifies whether schools have the structures and processes in place, necessary to meet their stated objectives and continually improve performance. Such quality standards can be used by organizations to differentiate themselves from competitors. Accreditation can be beneficial to many business schools for two reasons. One, accreditation processes require that business schools gain clarity about the markets they serve and the services they offer, which is increasingly important as enrolment markets grow more competitive. Second, the value of accreditation as a quality differentiator appears to be rising in the markets for part-time working students and international students (Zammuto, 2008). There is increasing focus on the general utility of entrepreneurial skills and aptitudes (i.e., creativity, independent thinking, opportunity recognition and exploitation, etc.), and it is our contention that entrepreneurship education offers an innovative new paradigm for business school education that answers some of the challenges that are currently levelled against the MBA. According to this critique, both the research and teaching missions of the business school are compromised (Binks et al., 2006).

Professional development of teachers frequently focuses on methodology and strategy. Information and opportunities to practise techniques are often offered in onetime, interactive workshops. One-shot faculty development opportunities are not designed to address a critical element of the faculty's role in the learning–teaching dynamics — individual beliefs, experiences, and research regarding learning of teachers and what is taught (Layne, 2002). The management practice requires a delicate and complex mix of art and craft, along with the science of analysis. MBA graduates are taught the science, but not the art and craft. Moreover, even if exposed to the art and craft of management, MBA students will not benefit because they lack managerial experience. Teaching inexperienced MBA graduates about management in a classroom setting is akin to a deaf man 'reading' *War and Peace* from an audiotape — a lot of noise is generated, but it is not absorbed and processed in any meaningful way (Barnett, 2005). Academicians, especially, would like to believe that their efforts influence their students positively.

3. Demography of the Present Study

The present study was conducted by collecting responses from principals, professors and final-year MBA students of Telangana region and its affiliated colleges through a structured questionnaire using Likert scale. The questionnaire was designed to elicit opinion on various parameters like corporate interaction, facilities for further research by faculty, technical support, college/government libraries, and so on.

4. Objectives of the Study

- To study the availability of infrastructure like projectors, audio visuals.
- To understand the availability of books, journals for research and convenience of the library timings for management learners.
- To inquire whether faculty are getting the salaries as per AICTE/UGC norms.

5. Hypotheses

Following are the hypotheses framed to study the above objectives:

$H_0$1: There is no significant association between type of college and teaching aids that are available in all classrooms, such as projectors, audio visuals.

$H_0$2: There is no significant association between type of college and sufficient numbers of books available in a library for management students.

$H_0$3: There is no significant association between type of college and sufficient number of journals available in a library for management students.

$H_0$4: There is no significant association between type of college and salaries of the teaching staff paid as per AICTE norms.

$H_0$5: There is no significant association between type of college and salaries of the teaching staff paid as per UGC norms.

$H_0$6: There is no significant association between type of college and district (government) libraries being open till 10.00 PM instead of closing at 7.00 PM.

6. Reliability Test for Questionnaire

Reliability (internal consistency of the questions) test for the questionnaire is carried out through Cronbach's alpha, and the result is:

Cronbach's alpha = 0.921

Number of Questions: 60

Inference: Cronbach's alpha was conducted to check reliability. The above figures are some of the results obtained. The overall alpha for all items is 0.921, which is very high and indicates strong internal consistency among the given items.

7. Tests of Hypotheses

Hypotheses based on the influencing factors are tested in particular. It may be mentioned that analysis of data from two groups at a time gave a better picture to understand the role of infrastructure in value addition.

$H_0$1: There is no significant association between type of college and teaching aids like projectors, audio visuals available in all classrooms.

Table 1: Crosstab – Teaching aids available in classrooms

Crosstab								
			Teaching aids available in all classrooms					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Type of college	University Campus	Count	2	7	5	20	24	58
		Percentage	3.4	12.1	8.6	34.5	41.4	100
	Affiliated College	Count	17	32	38	94	97	278
		Percentage	6.1	11.5	13.7	33.8	34.9	100
Total		Count	19	39	43	114	121	336
		Percentage	5.7	11.6	12.8	33.9	36	100

Table 2: Chi-Square Tests – Teaching aids available in classrooms

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.139[a]	4	.710
Likelihood Ratio	2.298	4	.681
Linear-by-Linear Association	1.133	1	.287
N of Valid Cases	336		

a. 1 cell (10 per cent) has expected count less than 5. The minimum expected count is 3.28.

Table 3: Symmetric Measures – Teaching aids available in classrooms

		Value	Approx. Sig.
Nominal by Nominal	Phi	.080	.710
	Cramer's V	.080	.710
No. of Valid Cases		336	

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis

Inference: The above table shows that chi square is not significant. Since significant value 0.710 > 0.05, the null hypothesis $H_0$1. There is no significant association between type of college and teaching aids like projectors, audio visuals available in classrooms is 'accepted' and the strength of association between the two variables is 8 per cent.

$H_0$2: There is no significant association between type of college and sufficient number of books available in a library for management students.

Table 4: Crosstab – Sufficient number of books are available for management students in library

Crosstab								
			Sufficient number of books are available for management students in a library					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Type of college	University Campus	Count	4	9	4	17	20	54
		Percentage	7.4	16.7	7.4	31.5	37	100
	Affiliated College	Count	17	28	20	111	98	274
		Percentage	6.2	10.2	7.3	40.5	35.8	100
Total		Count	21	37	24	128	118	328
		Percentage	6.4	11.3	7.3	39.0	36.0	100

Table 5: Chi-Square Tests – Sufficient number of books are available for management students in library

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.728[a]	4	.604
Likelihood Ratio	2.607	4	.626
Linear-by-Linear Association	.733	1	.392
N of Valid Cases	328		

a. 2 cells (20 per cent) have expected count less than 5. The minimum expected count is 3.46.

Table 6: Symmetric Measures – Sufficient number of books are available for management students in library

		Value	Approx. Sig.
Nominal by Nominal	Phi	.091	.604
	Cramer's V	.091	.604
No. of Valid Cases		328	

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis

Inference: The above table shows that chi square is not significant. Since significant value 0.604 > 0.05, the null hypothesis H_o2. There is no significant association between type of college and the sufficient number of books available for management students in a library is 'accepted' and the strength of association between the two variables is 9.1 per cent.

H_o3: There is no significant association between type of college and sufficient numbers of journals are available in library for management students.

Table 7: Crosstab – Sufficient number of journals are available for management students in a library

Crosstab								
			Sufficient number of books are available for management students in a library					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Type of college	University Campus	Count	1	7	11	22	16	57
		Percentage	1.8	12.3	19.3	38.6	28.1	100
	Affiliated College	Count	12	24	40	125	73	274
		Percentage	4.4	8.8	14.6	45.6	26.6	100
Total		Count	13	31	51	147	89	331
		Percentage	3.9	9.4	15.4	44.4	26.9	100

Table 8: Chi-Square Tests – Sufficient number of journals are available for management students in a library

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.689[a]	4	.611
Likelihood Ratio	2.799	4	.592
Linear-by-Linear Association	.025	1	.874
No. of Valid Cases	331		

a. 2 cells (20 per cent) have expected count less than 5. The minimum expected count is 3.46.

Table 9: Symmetric Measures – Sufficient number of journals are available for management students in a library

		Value	Approx. Sig.
Nominal by Nominal	Phi	.090	.611
	Cramer's V	.090	.611
No. of Valid Cases		331	

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis

Inference: The above table shows chi square is not significant. Since significant value 0.611 > 0.05, the null hypothesis $H_0$3. There is no significant association between type of college and in sufficient number of journals available in a library for management students is 'accepted' and the strength of association between the two variables is 9 per cent.

$H_0$4: There is no significant association between type of college and salaries for the teaching staff paid as per AICTE norms.

Table 10: Crosstab – Salaries for teaching staff paid as per AICTE norms

Crosstab								
			Salaries for teaching staff paid as per AICTE norms					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Type of college	University Campus	Count	1	2	31	13	6	53
		Percentage	1.9	3.8	58.5	24.5	11.3	100
	Affiliated College	Count	24	23	90	78	50	265
		Percentage	9.1	8.7	34	29.4	18.9	100
Total		Count	25	25	121	91	56	318
		Percentage	7.9	7.9	38.1	28.6	17.6	100

Table 11: Chi-Square Tests – Salaries for teaching staff paid as per AICTE norms

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.023[a]	4	.011
Likelihood Ratio	13.736	4	.008
Linear-by-Linear Association	.002	1	.964
No. of Valid Cases	318		

a. 2 cells (20 per cent) have expected count less than 5. The minimum expected count is 4.17.

Table 12: Symmetric Measures – Salaries for teaching staff paid as per AICTE norms

		Value	Approx. Sig.
Nominal by Nominal	Phi	.202	.011
	Cramer's V	.202	.011
No. of Valid Cases		318	

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis.

Inference: The above table shows chi square is not significant. Since significant value 0.011 > 0.05, the null hypothesis $H_0$4. There is no significant association between type of college and salaries for the teaching staff paid as per AICTE norms is 'accepted' and the strength of association between the two variables is 20.2 per cent.

$H_0$5: There is no significant association between type of college and salaries for the teaching staff paid as per UGC norms.

Table 13: Crosstab – Salaries for teaching staff paid as per UGC norms

Crosstab								
			Salaries for teaching staff paid as per AICTE norms					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Type of college	University Campus	Count	1	3	33	8	8	53
		Percentage	1.9	5.7	62.3	15.1	15.1	100
	Affiliated College	Count	24	19	98	79	43	263
		Percentage	9.1	7.2	37.3	30	16.3	100
Total		Count	25	22	131	87	51	316
		Percentage	7.9	7	41.5	27.5	16.1	100

Table 14: Chi-Square Tests – Salaries for teaching staff paid as per UGC norms

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.349[a]	4	.010
Likelihood Ratio	14.288	4	.006
Linear-by-Linear Association	.008	1	.931
No. of Valid Cases	316		

a. 2 cells (20 per cent) have expected count less than 5. The minimum expected count is 3.69.

Table 15: Symmetric Measures - Salaries for teaching staff paid as per UGC norms

		Value	Approx. Sig.
Nominal by Nominal	Phi	.206	.010
	Cramer's V	.206	.010
No. of Valid Cases		316	

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis.

Inference: The above table shows that chi square is not significant. Since significant value 0.010 > 0.05, the null hypothesis $H_0$5. There is no significant association between type of college and salaries for the teaching staff paid as per UGC norms is 'accepted' and the strength of association between the two variables is 20.6 per cent.

$H_0$6: There is no significant association between type of college and district libraries being open till 10.00 PM instead of closing at 7.00 PM.

Table 16: Crosstab – District libraries should be open till 10.00 PM instead of closing at 7.00 PM

Crosstab								
			District libraries should be open till 10.00 PM instead of closing at 7.00PM					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Type of college	University Campus	Count	1	3	8	22	22	56
		Percentage	1.8	5.4	14.3	39.3	39.3	100
	Affiliated College	Count	11	11	48	122	83	275
		Percentage	4	4	17.5	44.4	30.2	100
Total		Count	12	14	56	144	105	331
		Percentage	3.6	4.2	16.9	43.5	31.7	100

Table 17: Chi-Square Tests – District libraries should be open till 10.00 PM instead of closing at 7.00 PM

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.559[a]	4	.627
Likelihood Ratio	2.656	4	.617
Linear-by-Linear Association	1.243	1	.265
No. of Valid Cases	316		

a. 2 cells (20 per cent) have expected count less than 5. The minimum expected count is 2.03.

Table 18: Symmetric Measures – District libraries should be open till 10.00 PM instead of closing at 7.00 PM

		Value	Approx. Sig.
Nominal by Nominal	Phi	.0.89	.627
	Cramer's V	.089	.627
No. of Valid Cases		331	

a. Not assuming the null hypothesis

Inference: The above table shows that chi square is not significant. Since significant value 0.627 > 0.05, the null hypothesis $H_0$6. There is no significant association between type of college and district libraries being open till 10.00 PM instead of closing at 7.00 PM is 'accepted' and the strength of association between the two variables is 8.9 per cent.

8. Discussion of Results

From the cross tabs ($H_0$1, $H_0$2 & $H_0$3) it may be observed that sufficient infrastructure is available (teaching aids like projectors, audio-visuals, books and journals). So, focus should be more on availability of quality teachers to ensure quality delivery of MBA colleges. There is no significant difference in the level of satisfaction regarding availability of audio-visual aids, books, and journals in the library in urban and rural colleges. Hence this aspect is not going to yield any competitive advantage.

It may be concluded that certain colleges are following AICTE/UGC norms for payment of salaries and hence the remaining colleges may consider increasing the salaries for retention and quality delivery ($H_0$4 and $H_0$5). It may be observed that the need for providing government libraries for the purpose of MBA education is felt more by the faculty and students in rural areas than in urban areas, expressed that it may not have impact ($H_0$6).

9. Conclusion

Faculty development gives good valuable input to the students where they can face upcoming challenges. For that organizations have to provide facilities for further pursuits;. to develop good analytical skills every organization should have a good understanding with statistics department where the collected data are analyzed; and finally the management has to provide flexi timings to the faculty for collecting the data from various industries. The facilities provided to the staff give them a moral boost for further research, which is beneficial for the students and for organizational growth.

In the growing competition every organization, either educational or industrial, is looking forward to develop by way of providing computerized systems useful for the staff and students. For research activity, a library should be provided with sufficient journals and internet support. Finally on par with regular college library, the staff needs to get support externally, for that teaching institutions may be enhanced with latest technology.

Affiliated colleges need to follow the AICTE norms. To meet these norms every institution has to get support from Ministry of Human Resource Development for online lectures, for staff support in technical terms. To develop the interaction the organizations have to get government support.

Infrastructure needs to improve regularly, in particular the library, if a management college has to grow academically. The college management needs to update the library with books and journals. Every academician looks towards good libraries either in the college or outside. Government libraries need to be updated with latest technology and full-fledged facilities. Apart from the institutional libraries, the government needs to develop government libraries for the benefit of the rural people, and for assistance to the research scholars and students.

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"Education is the most powerful weapon which you can use to change the world."

– Nelson Mandela

Activity-Based Teaching in Higher Education Institutions

RUPA RATHEE AND PALLAVI RAJAIN

Activity-based teaching is based on the notion that students are active learners rather than passive recipients of information. Therefore, this study was conducted to find out how students in higher educational institutions perceive the use of activity-based teaching methods. A sample of 212 students from various private and government institutions was taken using non-probability sampling methods. It was found that students had a positive perception regarding activity-based teaching and they considered it a beneficial tool for all-round development of the learner. It was also observed that there was no significant difference in the perception of males and females regarding activity-based teaching.

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1. Introduction

Activity method is a technique adopted by a teacher to emphasize his or her teaching through activity, in which the students participate rigorously and bring about efficient learning experiences. It is a child-centred approach — a method in which the child is actively involved in participating mentally and physically. The main focus of this method is learning by doing, which is imperative in successful learning as it has been proved that more the senses are stimulated, more a person learns and longer he/she retains. Pine (1989) mentions that in activity-based teaching, learners willingly internalize and implement concepts relevant to their needs. So, the activity method can be understood as any learning that is carried out with a purpose in a social environment, involving physical and mental action, stimulating for creative action or expression.

The primary purpose of teaching at any level of education is to bring a fundamental change in the learner. To facilitate the process of knowledge transmission, teachers should apply appropriate teaching methods that best suit specific objectives and student outcomes (Ganyaupfu, 2013). In the traditional epoch, many teaching practitioners widely applied teacher-centred methods rather than student-centred ones to impart knowledge. Until today, questions about the effectiveness of teaching methods on student learning have consistently raised considerable interest in the thematic field of educational research (Hightower et al., 2011).

In order to make children learn effectively, the teacher has to adopt the right approach of teaching. There are various approaches for learning, such as independent learning, mastery learning, co- operative learning, activity-based teaching–learning strategies, etc., but research makes it clear that activity-based teaching is effective in

language learning. In this context, National Policy on Education (1986) recommended that a warm, welcoming and encouraging approach, in which all concerned share a solicitude for the needs of the child, is the best motivation for the child to attend school and learn. A child-centred and activity-based process of learning should be adopted at the primary stage. One should not view students as 'empty vessels' to be filled with academic content. Therefore, activity-based teaching–learning strategy provides the right environment to create educational settings where the students work together and learn by doing, playing, enjoying, co-operation, activity, and without stress.

2. Review of Literature

Raelin (1997) illustrated a model of work-based learning which attempted to combine explicit and tacit forms of knowledge. Participants learn as they work by taking time to reflect with their colleagues who offer insights into their workplace problems. The author makes a clear distinction between work-based learning and theoretical work-related knowledge. He states that action learning is based on the straightforward pedagogical notion that people learn most effectively when working on real-time problems occurring in their own work settings. Raelin introduced the learning equation, first drafted by Revans, which helped operationalize the process. Reichard (2002) described and assessed forms, conditions and advantages of problem-oriented learning and presented several variants of active teaching methods: Panel Discussion, Role Playing, Case Studies, Simulation Games and Project Study. The strengths and weaknesses of these methods were assessed in the light of the objectives of public management teaching. Additionally, new experiences with summer schools, multinational lectureships and intercultural learning in the postgraduate Public Management programme at Potsdam University were reported. Similarly, Swail and Kampits (2004) identified the types and breadth of work-based learning activities that four-year college students experienced during high school, and to determine the correlation of these activities with their post-secondary experience. The survey, administered to eight institutions in spring 2002, queried first-year students at four-year institutions about their work-based learning experiences during high school and their learning preferences. It was concluded that students who participated in high school work-based learning activities achieved more at the four-year post-secondary level as well or better than students who did not participate in these activities. Stößlein (2009) investigated the reaction of PhD students and junior faculty to a six-month course in Survey Research Methodology that used active learning experiences. Empirical evidence indicated that an active learning approach is more successful than the traditional technique-based course and exam format. The author analyzed learning preferences, overall knowledge and skills acquired, and degree of satisfaction —before, during and after the course. Given the positive feedback received, it was concluded that the modified teaching strategy seems to be effective. Gleason et al. (2011) described evidence supporting the use of active-learning strategies in pharmacy education and also offered strategies for implementing active learning in pharmacy curricula in the classroom and during pharmacy practice experiences. Preparing pharmacy graduates to provide patient-focused care required that students actively integrate knowledge, skills, attitudes, values, and behaviours in pharmacy practice activities. As barriers to the use of active-learning methods are recognized, they can and should be overcome.

Ranganath (2012) argued that an active interaction with a learning object in activity-driven or activity-based learning enables construction of learners' mental models. The goal of activity-based learning is for learners to construct mental models that allow for 'higher-order' performance, such as applied problem-solving and transfer of information and skills. This paper focuses on the crucial model of learning objects with activity-based learning. The focus was on activity-based learning because it is believed to be as one of the best ways of learning and teaching, especially in Business Management. Khan et al. (2012) investigated the impact of activity-based teaching on students' achievements in physics at secondary level. Pre-test and Post-test Control Group Design of experimental research was selected for this research study. Two multiple choice questions-type achievement tests were used as research tools for data collection. The experimental group was taught with the help of activities whereas the control group was taught the same lessons through traditional method of teaching for a period of six weeks. The t-test was used to analyze the data. The results showed that activity-based teaching is more effective for the development of higher-order skills in students.

Pierse and Sutton (2012) explored the value of activity-based learning in classrooms for students of law. The authors were keen to introduce activities and learning aids that would not only enhance the learner's experience,

but also cultivate better learner retention levels, while keeping the adult evening learners alert and engaged. The authors initially outlined the learning aids that were developed and implemented in their efforts to enhance the modules taught in the course. Next, the authors focussed on The Learning Pyramid, researched and created by the National Training Laboratories in Betel, Maine, which illustrates the percentage of learner recall that is associated with various approaches. It is a much-documented guide for lecturers and helps them when designing effective teaching resources. The authors concluded with the analysis that the inclusion of activities provides students with a myriad of benefits at all levels of the Learning Pyramid. Fallon et al. (2013) developed a module that embraces an activity-based approach to learning in a group environment. It was believed that successful completion of this module would equip students with a deeply-learned battery of research skills to take into their further academic and professional careers. In order to encourage student engagement, a wide variety of activities were used. These included workshops, brainstorming, mind-mapping, presentations, written submissions, peer critiquing, lectures/seminars, and 'speed dating' with more senior students and self-reflection. The findings of this paper agreed with much of the previous research regarding the limitations of lecture-based approach to learning.

Rathee and Sharma (2013) explored the various activity-based learning techniques and described some of these innovative methods, such as crosswords, card games and creativity sessions. The authors concluded that traditional teaching methods considered students as passive participants. They found that the management institutions produced students who had only theoretical knowledge and lacked the skills required in the corporate world, leading to gaps in learning. For classroom teaching to be effective in the present scenario it is required that innovative and vibrant methods are adopted. In order to achieve this goal, the teachers have to be trained properly so that they can impart activity-based learning in the right manner. Bolaji (2014) examined the effect of lecture and activity-based methods on the attitude of junior secondary school students in essay writing in French with the purpose of finding out which of the methods could promote higher positive attitude in students towards the subject. The study adopted the quasi-experimental research design which focused on students' attitude towards essay writing in French. The study eventually revealed that activity-based method of teaching had a higher positive effect on the attitude of students than lecture method. Furthermore, activity-based method of teaching was found pedagogically effective and highly rewarding.

Awasthi (2014) concluded that activity-based learning methodology can be useful in the Indian context. It will not only be helpful in attracting the child towards school but also useful in uplifting the standard of quality of education in the country. The government should put more and more emphasis on activity-based learning, especially at primary and secondary level. Activity-based learning will certainly reduce the weight of the school bag. At present, it is not a very common method of teaching in government schools, but with gradual and continuous efforts it can be acquired as a prime method of teaching.Selaolo and Lotriet (2014) reported on a co-design process that was initiated between the government and the private sector in Botswana to redesign current information systems development (ISD) practice, with particular focus on finding a solution for learning failure. Through the Developmental Work Research (DWR) methodology, which is based on Cultural-Historical Activity Theory (CHAT) principles, ISD practitioners from government and the private sector together with users collaborated to redesign the current Botswana ISD work practice in order to address this shortcoming. The result has been the incorporation of activity-based learning and reflection into a proposed improved ISD practice framework for Botswana. Thangam (2015) analyzed and evaluated the quality of service rendered in activity-based learning education system in government schools. The implemented system has increased the performance of students in terms of improvement in the following aspects — student's speed of learning and capability; children's intelligence in academics; relationship between students and teachers; students' eagerness, interest and engagement with subjects; group activity; self-confidence; self-learning; discipline; creativity and participation. Teachers' satisfaction level and service quality also increased. Overall it can be concluded that the implemented activity-based learning system in primary education is effective and the impact is favourable for both students and teachers.

Balanescu (2015) presented some theoretical aspects related to project-based learning method and its features, and some aspects regarding how it was applied in the artistic higher education within the National Music University in Bucharest. The project-based learning can take a variety of shapes, depending on the subject specificity the project is prepared for, the approached topic

complexity (imposed or chosen, preferred), the age of the project creators, their creative skills, the workmanship of the teaching staff, who must stimulate the project initiators' efforts, to encourage them during the activity performance, regardless of whether it is performed at individual or micro-group level. Rathee and Rajain (2016) found that overall there is an agreement among students regarding the effectiveness of including activity-based learning in their curriculum. Authors also found that the students consider themselves responsible for the prevalent barriers in the implementation of this form of learning. The t-test based on gender showed that male and female respondents do not have any significant difference in their views regarding the effectiveness of activity-based learning. Lastly, it was found that there was significant correlation between the education of the students and that activity-based learning is more engaging than traditional learning. Hence it can be said that including activity-based learning in management institutes has helped the students in improving their skills and knowledge and has also led to more engagement than traditional learning.

3. Objectives

1. To study how students perceive activity-based teaching in higher education.
2. To compare the perception of male and female students towards activity-based teaching in higher education.
3. To identify hurdles and give suggestions for effective implementation of activity-based teaching.

4. Hypothesis

H_1: There is significant difference in the perception of males and females regarding activity-based teaching.

5. Research Methodology

Descriptive research design has been applied to meet the above mentioned objectives. Non-probability sampling has been used. Data has been collected through both primary and secondary data collection methods. Primary data was collected through questionnaires filled by 212 students from various government and private institutions. The period of data collection was from 25 April to 20 June 2017. After the collection of data, it was checked for missing values and dealt with accordingly. The data was analyzed through Statistical Package for Social Sciences version 23.

6. Analysis and Interpretation

6.1. Reliability of Scale

The Cronbach's alpha was recorded as 0.841, exceeding the required 0.7 benchmark for reliability (Hair et al., 2010), indicating a high degree of reliability.

6.2. Demographic Profile

The respondents included 52.4 per cent males and 47.6 per cent females. Majority of these were unmarried (67.9 per cent) and belonged to the age group of 24–29 years (45.3 per cent). Most of the respondents were graduates (57.1 per cent).

6.3. Perception of students towards Activity-based Teaching in Higher Education

From Table 1 it can be seen that the mean for majority of the statements is close to the value of 4.00, which suggests that majority of the respondents are of the opinion that activity-based teaching is helpful and they have a positive perception regarding this method. The value of mean is highest ($\bar{x}$ = 3.90) for the statement that learning is joyful and lasting through activity-based teaching methods. The value of mean is lowest for the statement ($\bar{x}$ = 2.39) that students feel sleepy or bored during class, which suggests that they are interested in activity-based teaching. The students also feel that activity-based learning provides optimum learning environment. They showed agreement with the statement that activity-based methods provide opportunities for discovery learning. They also believe that activities are meaningful, purposeful and objective.

6.4. Comparison of Males and Females regarding Perception towards Activity-based Teaching in Higher Education

Table 2 shows the mean values for perception of males and females towards activity-based teaching in higher education.

For ascertaining whether significant difference exists between the male and female respondents' perception towards activity-based teaching in higher education, Levene's test checks for equality of variance among the two groups. Significance value of Levene's test > 0.05 indicates that equal variance is assumed. In the given Table 4 all groups have equal variances. The t-test statistics (significance value) less than level of significance (0.05) indicate that the two categories of independent variables (male and female) differ significantly in their response to the various statements.

Table 1: Perception of students towards Activity-based teaching in higher education

Statements	Mean	Std Deviation
Your learning is joyful and long lasting.	3.90	.985
You are provided with the opportunity to explore of your own.	3.77	.976
You are provided with an optimum learning environment.	3.70	1.045
Your curriculum is divided into small units which is a group of self-learning material.	3.61	1.132
The concept is taught through activities like games, discussion, debate, brainstorming, etc.	3.45	1.209
There is learner centred approach in your class.	3.46	1.248
The teachers give you projects, assignments or presentations on different topics.	3.80	1.089
Through activity-based teaching, you have better retention than lecture method.	3.66	1.083
You are provided with effective learning resources like books, models, etc.	3.40	1.229
You get opportunities to have quizzes in your institution.	3.60	1.107
You feel sleepy and bored during your class.	2.39	2.373
Your class environment is motivating.	3.72	1.086
Your teacher pays individual attention to all.	3.47	1.120
Your institution organized visits & tours to educational places.	3.57	1.071
The teacher acts as a facilitator, guide during activity-based study.	2.55	1.076
There is discipline problem in activity-based teaching.	3.37	1.176
Students develop different skills through activity-based teaching.	3.67	1.137
There is flexibility in activity-based teaching.	3.58	1.122
There is collaboration & exchange of ideas through activity-based teaching.	3.69	1.117
The children of your class learn at their own pace.	3.49	1.095
The educational aids foster self-learning.	3.74	1.170
The educational aids allow a child to study according to his/her aptitude & skill.	3.64	1.055
The activity-based method has created a visible improvement in children's learning and psychology.	3.47	1.086
The activities are integrated. (Integrated with other subjects / concepts / topics)	3.65	1.165
The activities are inclusive. (Inclusive of all types of learner's needs: visually handicapped; hearing impaired; orthopedically disabled.)	3.61	1.103
Activity-based learning fosters all round development of the learner (cognitive, social, emotional, physical development).	3.81	1.091
The activities are meaningful, purposeful and objective.	3.61	1.213
The activities are perfectly correlated with the topic or concept.	3.56	1.189
Activity-based method provides opportunities for self-assessment & peer-assessment.	3.58	1.096
Activity-based method provides opportunities for discovery learning.	3.74	1.091
Activity-based learning facilitates learning in groups and mutual learning.	3.62	1.097
Activities foster the imaginative & creative skills of the learner.	3.67	1.072
Overall	**3.55**	**1.153**

Source: Survey by authors

Table 2: Group Statistics

Statements	Gender	Mean	Std Deviation	Std Error Mean
Your learning is joyful and long lasting.	Male	3.81	1.014	.096
	Female	4.00	.949	.094
You are provided with the opportunity to explore of your own.	Male	3.72	.946	.090
	Female	3.83	1.011	.101
You are provided with an optimum learning environment.	Male	3.66	1.083	.103
	Female	3.75	1.004	.100
Your curriculum is divided into small units which is a group of self-learning material.	Male	3.60	1.138	.108
	Female	3.62	1.130	.112
The concept is taught through activities like games, discussion, debate, brainstorming, etc.	Male	3.50	1.127	.107
	Female	3.39	1.296	.129
There is learner-centred approach in your class.	Male	3.29	1.224	.116
	Female	3.64	1.254	.125
The teachers give you projects, assignments or presentations on different topics.	Male	3.68	1.027	.097
	Female	3.92	1.146	.114
Through activity-based teaching, you have better retention than lecture method.	Male	3.53	1.135	.108
	Female	3.80	1.010	.101
You are provided with effective learning resources like books, models etc.	Male	3.42	1.203	.114
	Female	3.37	1.263	.126
You get opportunities to have quizzes in your institution.	Male	3.54	1.068	.101
	Female	3.67	1.150	.114
You feel sleepy and bored during your class.	Male	2.54	3.127	.297
	Female	2.23	1.038	.103
Your class environment is motivating.	Male	3.67	1.090	.103
	Female	3.77	1.085	.108
Your teacher pays individual attention to all.	Male	3.50	1.103	.105
	Female	3.45	1.144	.114
Your institution organized visits & tours to educational places.	Male	3.55	1.110	.105
	Female	3.59	1.031	.103
The teacher acts as a facilitator, guide during activity-based study.	Male	2.53	1.016	.096
	Female	2.57	1.143	.114
There is discipline problem in activity-based teaching.	Male	3.45	1.118	.106
	Female	3.29	1.236	.123
	Female	3.49	1.246	.124
Students develop different skills through activity-based teaching.	Male	3.48	1.127	.107
	Female	3.88	1.116	.111
There is flexibility in activity-based teaching.	Male	3.50	1.175	.111
	Female	3.67	1.059	.105
There is collaboration & exchange of ideas through activity-based teaching.	Male	3.65	1.067	.101
	Female	3.73	1.174	.117
The children of your class learn at their own pace.	Male	3.42	1.149	.109
	Female	3.55	1.034	.103

The educational aids foster self-learning.	Male	3.66	1.195	.113
	Female	3.83	1.141	.114
The educational aids allow a child to study according to his/her aptitude & skill.	Male	3.59	1.004	.095
	Female	3.69	1.111	.111
The activity-based method has created a visible improvement in children's learning and psychology.	Male	3.45	1.118	.106
	Female	3.50	1.055	.105
The activities are integrated. (Integrated with other subjects / concepts / topics)	Male	3.58	1.247	.118
	Female	3.73	1.067	.106
The activities are inclusive. (Inclusive of all types of learner's needs: visually handicapped; hearing impaired; orthopedically disabled.)	Male	3.62	.982	.093
	Female	3.59	1.226	.122
Activity-based learning fosters all round development of the learner (cognitive, social, emotional, physical development).	Male	3.63	1.128	.107
	Female	4.00	1.020	.101
The activities are meaningful, purposeful and objective.	Male	3.43	1.226	.116
	Female	3.80	1.175	.117
The activities are perfectly correlated with the topic or concept.	Male	3.51	1.213	.115
	Female	3.60	1.167	.116
Activity-based method provides opportunities for self-assessment & peer-assessment.	Male	3.44	1.101	.105
	Female	3.73	1.076	.107
Activity-based method provides opportunities for discovery learning.	Male	3.65	1.067	.101
	Female	3.83	1.114	.111
Activity-based learning facilitates learning in groups and mutual learning.	Male	3.58	1.083	.103
	Female	3.67	1.115	.111
Activities foster the imaginative & creative skills of the learner.	Male	3.58	1.116	.106
	Female	3.78	1.016	.101

Source: Survey by authors

In this case no significant difference was observed as all significance value is greater than 0.05, except for four statements. Thus, it can be concluded that male and female respondents have no significant difference in their perception towards activity-based teaching. Hence, hypothesis H_1 is rejected.

7. Conclusion

Activity-based teaching facilitates the process of knowledge transmission, therefore teachers should apply appropriate teaching methods that best suit specific objectives. Thus, this study was conducted to analyze how students perceive activity-based teaching and if there exists a difference between males and females regarding their perception towards activity-based teaching — it was found that overall there was a positive perception among students. These results are in line with previous studies (Swail and Kampits, 2004; Stößlein, 2009) which suggested that students who participated in high school work-based learning activities at four-year post-secondary level courses achieved better than the students who did not participate in these activities. It was also concluded that male and female respondents have no significant difference in their perception towards activity-based teaching.

8. Suggestions

After analyzing the results of the study, it was found that most students agreed to the fact that activity-based teaching leads to indiscipline in the classroom. Therefore, the teachers/facilitators could organize the activity in smaller groups so that it is easier to conduct the activity in an orderly manner. Secondly, it was found that although there is provision to accommodate students with special needs (visually, hearing or orthopaedically challenged), there is a greater need to develop activities according to their interests. Thus, the institutions should focus on developing new and innovative methods in order to adjust according to everyone's needs.

Table 3: Independent Samples Test

Statements		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	Df	Sig. (2- tailed)
Your learning is joyful and long lasting.	Equal variances assumed	2.812	.095	-1.399	210	.163
	Equal variances not assumed			-1.404	209.828	.162
You are provided with the opportunity to explore of your own.	Equal variances assumed	.185	.668	-.826	210	.410
	Equal variances not assumed			-.823	204.687	.411
You are provided with an optimum learning environment.	Equal variances assumed	.737	.392	-.659	210	.511
	Equal variances not assumed			-.661	209.922	.509
Your curriculum is divided into small units which is a group of self-learning material.	Equal variances assumed	.022	.881	-.129	210	.897
	Equal variances not assumed			-.129	208.403	.897
The concept is taught through activities like games,discussion,debate, brain-storming etc.	Equal variances assumed	5.379	.021	.711	210	.478
	Equal variances not assumed			.706	199.231	.481
There is learner centered approach in your class.	Equal variances assumed	.329	.567	-2.087	210	**.038**
	Equal variances not assumed			-2.084	207.074	**.038**
The teachers give you projects, assignments or presentations on different topics.	Equal variances assumed	1.054	.306	-1.582	210	.115
	Equal variances not assumed			-1.574	201.627	.117
Through activity-based teaching, you have better retention than lecture method.	Equal variances assumed	3.964	.048	-1.826	210	.069
	Equal variances not assumed			-1.836	209.904	.068
You are provided with effective learning resources like books, models etc.	Equal variances assumed	.433	.511	.337	210	.736
	Equal variances not assumed			.336	205.767	.737
You get opportunities to have quizzes in your institution.	Equal variances assumed	.858	.355	-.871	210	.385
	Equal variances not assumed			-.868	204.243	.386
You feel sleepy & bored during your class.	Equal variances assumed	1.492	.223	.958	210	.339
	Equal variances not assumed			.995	136.065	.321
Your class environment is motivating.	Equal variances assumed	.243	.623	-.706	210	.481
	Equal variances not assumed			-.706	208.292	.481
Your teacher pays individual attention to all.	Equal variances assumed	.268	.605	.324	210	.747
	Equal variances not assumed			.323	206.411	.747
Your institution organized visits & tours to educational places.	Equal variances assumed	.775	.380	-.302	210	.763
	Equal variances not assumed			-.303	209.903	.762
The teacher acts as a facilitator, guide during activity-based study.	Equal variances assumed	3.746	.054	-.288	210	.774
	Equal variances not assumed			-.286	201.037	.775
There is discipline problem in activity-based teaching.	Equal variances assumed	1.023	.313	1.010	210	.313
	Equal variances not assumed			1.006	202.378	.316
	Equal variances not assumed			.612	202.682	.541
Students develop different skills through activity-based teaching.	Equal variances assumed	.525	.470	-2.617	210	**.010**
	Equal variances not assumed			-2.618	208.484	**.009**
There is flexibility in activity-based teaching.	Equal variances assumed	2.641	.106	-1.153	210	.250
	Equal variances not assumed			-1.159	209.985	.248

There is collaboration & exchange of ideas through activity-based teaching.	Equal variances assumed	.578	.448	-.546	210	.586
	Equal variances not assumed			-.543	202.740	.587
The children of your class learn at their own pace.	Equal variances assumed	1.993	.159	-.870	210	.385
	Equal variances not assumed			-.874	209.979	.383
The educational aids foster self-learning.	Equal variances assumed	.786	.376	-1.082	210	.280
	Equal variances not assumed			-1.085	209.502	.279
The educational aids allow a child to study according to his/her aptitude & skill.	Equal variances assumed	1.250	.265	-.740	210	.460
	Equal variances not assumed			-.736	202.292	.462
The activity-based method has created a visible improvement in children's learning and psychology.	Equal variances assumed	1.032	.311	-.298	210	.766
	Equal variances not assumed			-.299	209.718	.765
The activities are integrated. (Integrated with other subjects / concepts / topics.)	Equal variances assumed	4.432	.036	-.975	210	.331
	Equal variances not assumed			-.982	209.218	.327
The activities are inclusive. (Inclusive of all types of learner's needs: visually handicapped; hearing impaired; orthopedically disabled.)	Equal variances assumed	8.116	.005	.181	210	.856
	Equal variances not assumed			.180	191.503	.858
Activity-based learning fosters all round development of the learner (cognitive, social, emotional, physical development).	Equal variances assumed	4.005	.047	-2.493	210	**.013**
	Equal variances not assumed			-2.504	209.993	**.013**
The activities are meaningful, purposeful and objective.	Equal variances assumed	.575	.449	-2.236	210	**.026**
	Equal variances not assumed			-2.241	209.421	**.026**
The activities are perfectly correlated with the topic or concept.	Equal variances assumed	.576	.449	-.552	210	.581
	Equal variances not assumed			-.553	209.332	.581
Activity-based method provides opportunities for self-assessment & peer-assessment.	Equal variances assumed	.391	.532	-1.944	210	.053
	Equal variances not assumed			-1.946	208.921	.053
Activity-based method provides opportunities for discovery learning.	Equal variances assumed	.077	.781	-1.221	210	.223
	Equal variances not assumed			-1.219	206.090	.224
Activity-based learning facilitates learning in groups and mutual learning.	Equal variances assumed	.001	.976	-.640	210	.523
	Equal variances not assumed			-.639	206.860	.523
Activities foster the imaginative & creative skills of the learner.	Equal variances assumed	1.668	.198	-1.398	210	.164
	Equal variances not assumed			-1.404	210.000	.162

Source : Survey by Authors

9. Managerial Implications

This study suggests that students consider activity-based teaching as a good method of learning which actively involves the participants. They have a positive perception regarding the use of these methods in classroom teaching. Therefore, institutions should try to inculcate this method in their curriculum rather than just as an additional tool. Moreover, it was found that these methods of teaching are more common in engineering and management institutions. Thus, other higher education institutions (arts, humanities, etc.) should also adopt activity-based teaching methods to make learning more interesting.

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"Education is the key to unlock the golden door of freedom."

– George Washington

Internationalization of Higher Education in India: Emerging Trends, Strategies and Policies

SURENDRA MANI TRIPATHI AND ANJALI BAJPAI

Higher education is one of the most vital instruments for socio-economic transformation and human capital development of a nation. In the contemporary scenario, the international dimension of higher education is being considered as a prominent feature across the world. It has emerged as one of the major driving forces to restructure and transform the higher education system to produce skilled human capital, also make it business oriented. The international dimension is becoming necessary for institutions due to increasing cross-border mobility and influence of globalization. The contemporary working culture is becoming more and more entrepreneurial, international and professional. Higher Education Institutions (HEIs) have now to play a very important role in enhancing international and intercultural experiences, skills and competences needed for a person to work successfully anywhere across the world.

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1. Introduction

> *Knowledge is international and there should be no barriers to obtaining it from anywhere in the world.*
>
> — Kothari Commission (1964–66)

India has seen a dramatic social and economical transformation during the last 67 years from an agriculture-based to an industry-based economy. Economical progression, social reconstruction and sustainable development of a nation depend on higher education. 'Higher education develops the advanced skill needed for modern economies, by developing technical, professional and discipline-specific knowledge and skills; cognitive and information processing skills; and social and emotional skills in graduates that prepares them for the world of work.' (OECD, 2017, 9). Higher Education Institutions (HEIs) are becoming more and more globalized and are focused on establishing collaborations with reputed international HEIs to enhance the capabilities of their faculties and students working in international and intercultural atmosphere. Globalization and higher education forces are highly interdependent and interconnected (Scott, 1998, cited in Khan et al., 2016, 87). Universities and their academic activities have always been international in nature but currently they are becoming similar to commercial institutions.

In the contemporary scenario, the international dimension of higher education has been considered as one of the most prominent features across the world. Internationalization of higher education is not a new phenomenon but has been prevalent since ancient time in India, which has had a rich tradition of international academic activities since 500 BCE. Takshashila, Nalanda and Vikramshila were excellent centres of learning and

are considered as most ancient universities in the world. These universities were international in nature and had successfully attracted the students and faculties from all over the world, mainly from Asia and Africa. Internationalization has grown in the 21st century and become a strategic preference in India with the commencement of liberalization and globalization that was ushered in the country in late 20th century. The contemporary world is becoming extremely competitive and challenging which has increased the importance of international dimensions in higher education and researches. 'The international dimension of higher education is becoming increasingly important, complex and confusing' (Knight, 2004 cited in Ralyk, N. V. pp.3. 2008. Spring).

2. Development of the Concept of Internationalization of Higher Education

During the last several decades, the higher education system has played a vital role in economic empowerment, nation-building and individual development. HEIs are becoming international as well as intercultural and academic alliances and collaborations are empowering them. The policy makers, educational institutions and stakeholders of higher education have shown their propensity for internationalization. The American Heritage Dictionary (2000) states that internationalization is the process of 'making something international' (cited in Ralyk, 2008, p. 3). The term 'internationalization' is a complex and multi-dimensional phenomenon that earned popularity during the 1980s in the field of higher education. Jane Knight shared the views of Arum and Van de Water while defining internationalization as 'The multiple activities, programs, and services that fall within international studies, international exchange and technical co-operation' (Knight, 2004 pp.9). Jane Knight has given a sound and well-accepted definition of internationalization of higher education with some corrections for ensuring its powerful role and importance. She further defines it as: 'The process of integrating the international, intercultural or global dimension into the purpose, functions and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff, and to make a meaningful contribution to society' (Knight, cited in European Parliament report policy department B, p. 29).

In 2005, the International Association of Universities (IAU) conducted a survey of HEIs and national university member associations from 95 countries. The survey identified four major rationales for internationalization at the national level. In rank order, the reasons were (a) competitiveness, (b) strategic alliances, (c) human resource capacity, and (d) international cooperation (IAU Report 2005, cited in Hayle, 2008, p. 26).

The HEIs have entered a new era of progression where the students and faculties from various nations are sharing the international atmosphere and producing excellence worldwide. Hans de Wit has quoted in his work that 'internationalization is process to introduce intercultural, international and global dimension in higher education to improve the goals, functions and delivery of higher education and with that to improve the quality of education and research' (2013, p. 32).

Internationalization of higher education provides an integrated approach for strategic planning. The increasing interdependence among nations in the contemporary globalized era has pushed the demand for skilled entrepreneurship and efficient and distinctive workforce which can work effectively in diversified socio-cultural atmosphere. There is not much literature available on the international dimensions of higher education and the research conducted on this issue is still in its infancy, but the last two decades have seen a paradigm shift in the field internationalization of higher education.

3. Rationales behind choosing Internationalization as Strategy

Internationalization of higher education has been reported as becoming an urgent necessity (Mestenhauser, 2005 cited in Hayle, 2008, p. 9). It is widely acknowledged that the structure and function of the globe has changed considerably during the last few decades and multicultural co-existence along with cross-border mobility has been extremely appreciated in every nation. The question that generally emerges in our mind is that 'why should we internationalize our higher education? And what is its benefit?'

Knight and de Wit (1997, 2002 and 2004) recognized four groups of rationale for internationalizing higher education — academic, socio-cultural, political and economic. They have provided sound conceptual framework for explaining internationalization. The political rationale is concerned with security, stability and

ideological influences, which is achieved by internationalization efforts. Internationalization of higher education is one of the major instruments of foreign policy which promotes better external affairs. Academic rationale of internationalization in the field of higher education is considered as a motivating force to increase competency of both individuals and educational institutions. Knight (1997, 2004) has pointed out that one of the main reasons for internationalizing higher education is the achievement of international academic standards for teaching and research. The internationalization enhances new approaches as well as gives new dimensions to higher education. The socio-cultural rationale of higher education is based on integrating and harmonizing at the international level to emphasize on understanding foreign language, cultures, the preservation of national culture and respect for diversity. Knight found in her cross-country analysis of Australia, Canada, USA and Europe that the 'economic rationale has an increasing importance and relevance.' Economic rationale is considered as an effort to develop human resources/capital needed for enhancing economic competitiveness at the international level as well as increasing the financial resources of the institutions.

The quality of our higher education system can be enhanced by inculcating the international dimensions of teaching, research and service. OECD report reveals that 'nations have realized that student flows across borders can have beneficial effects to the national economy while providing students with a higher level of global consciousness, cultural understanding and competitiveness' (OECD, 2009, cited in Mergner, 2011, p. 11). According to the University Association survey report 2005, 'majority of the higher education leaders across the world think that internationalization is of utmost importance and the numbers of participant nations in internationalization activities have been increased.' Most of the nations are adopting internationalization as an integrated and strategic approach for developing a global platform for quality higher education.

Scott (1993) identified some essential grounds for governments to internationalize their higher education system — the increasing competitive nature of economics, countries' wish for environmental interdependence, the multicultural and multi-religious diversity within nations, the growing number of foreign-owned firms within national borders and the pressure they exert on local businesses, the multiracialism of academic supervisors and striving for peaceful relations between nations.

4. Internationalization of Higher Education in Indian Perspective

Globalization has influenced the activities of academic institutions all over the world. It has stimulated most of the nations to envisage the role of international cooperation and collaboration, which is becoming increasingly important in higher education. HEIs in India, from the post-Independence period, have played overarching role in nation-building and strengthening the human capital. During last few decades India has become a powerful entity in the world community and has attracted people, students, investment and working capital from all over the world. Currently, a globalized economy, quality education and competent workforce are the major driving forces for a successful nation. Internationalization has created a notable impact on Indian higher education system also. The Indian government as well as leading HEIs have acknowledged it as priority and future of higher education, and emphasized on the need and importance of inculcating it. This is an era of information society and knowledge-based economy where knowledge plays a pivotal role in the progress of a nation. India, the biggest democracy and second-most populous nation of the world has realized that if it has to emerge as a superpower it should certainly achieve pre-eminence in the global arena of higher education. Government of India is increasing attention and emphasizing on the various aspects of internationalization of higher education.

The former Prime Minister Dr Manmohan Singh (2005) has rightly said that 21st century will be the 'knowledge century' in which knowledge will be the major dominating power for socio-economic transformation. Currently the higher education sector is the priority of the government. The contemporary job market demands highly skilled employees who are willing to work anywhere across the world without any hassle.

The Indian higher education system is the third largest in the world in term of students, next only to China and United States. The International Labour Organization (ILO) predicted that 'by 2020 India will be youngest country with average age of 29 years as against 40 years in USA, 46 years in Japan and 47 years in Europe' (RUSA Report, 2013, p. 8). In spite of the huge population, the gross enrolment ratio of India has remained very low — according

to AISHE 2015 (for the age group 18–23 years), the ratio is 23.6 per cent.

5. Role of Internationalization of higher education in Human capital Development

In the last few years, the quality issues in HEIs have been given priorities by most of the nations and the focus is on developing world-class research institutes that can produce internationally acclaimed experts, scholars and entrepreneurs. Most of the European governments as well as universities are willing to establish connectivity with industries. International Trends in Higher Education report (2015) reveals that the European Union is committed to invest around 80 billion Euros on only research and innovation during 2014–20 with the same determinations. The Government of France established a university named Paris-Saclay which is concentrated on developing a knowledge hub around Paris. The new president of this university Dominique Vernay is strongly in favour of strengthening the links with industry and ability to launch start-ups. There is no doubt that India wants to be a global member and is extremely interested in internationalization, but attempts, policies, monitoring system and will power for assuring quality education, standard research level and maintaining global norms are not satisfactory.

The move towards knowledge-based economy and academia–industry tie-up is imperative to speed up the growth of higher education along with industry. Researchers at Tata Institute of Social Sciences (TISS) say that 'the faculty at colleges has limited quality industry experiences. The best practice may be to get significant bits of training, at least 25%, to be delivered by actual industry expert.' In India there is a poor relationship

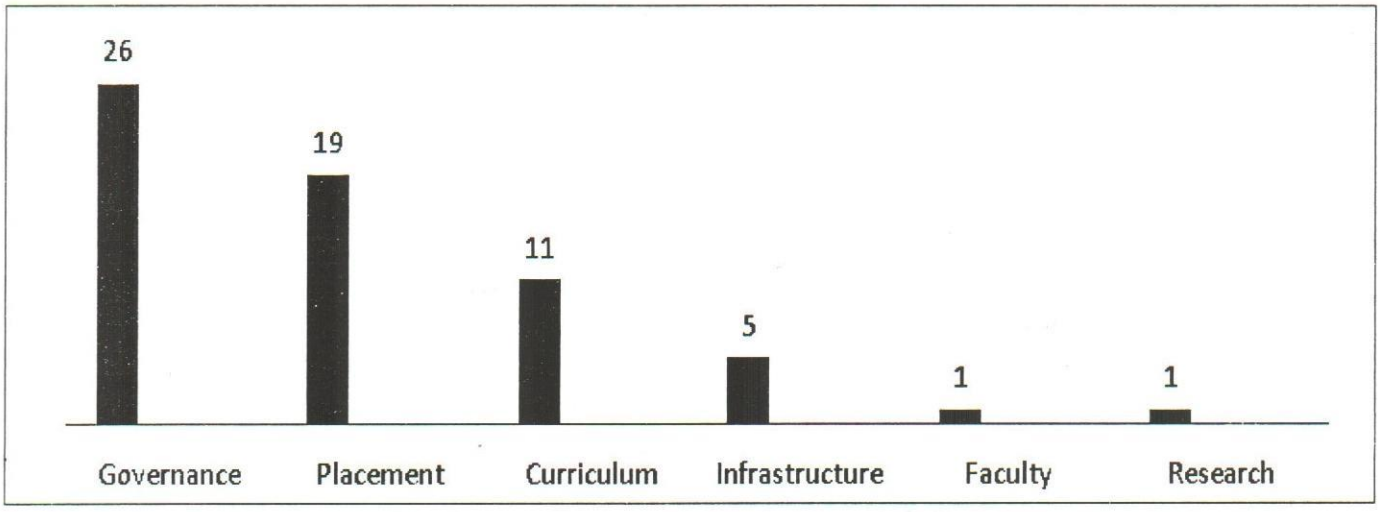

Figure 1: Percentage of Institutes with Industry–Academia linkage in different parameters (2012–13)

Source: CII & AICTE survey in 1,050 Engineering and Management Institutes (Cited in FICCI, Higher Education in India Report, 2014, 22)

between HEIs and industrial experiences, which decreases the capabilities of working people when they face real-life work experiences.

This survey report in Figure 1 reveals that the Indian institutes do not have satisfactory performance on the above parameters, except governance and placement. Research, faculty, infrastructure and curriculum are the basis of higher education, so special treatment should be given to enhance the quality of higher education.

6. Ground Realities

The Indian government, HEIs, various stakeholders and policymakers are unanimously supporting and encouraging internationalization of higher education. Although this unavoidable need has now been well-established, there are still so many encumbrances in the way of achieving this goal. The noteworthy intention to internationalize the HEIs was recently conveyed by the government as well as the private sector in India and some of these providers have creditably attracted international students. Currently the internationalization of higher education in India is characterized by some discrete features, which are as follows:

- **Very few institutions are committed to internationalization of higher education:** Most of the Indian institutions are not globally reputed and ranked low due to poor academic performance

and teaching–learning activities of the students as well as teachers, who lag behind in citation and research work. There are so many institutions in India with no desire to fulfil the global norms and standards. They don't even take interest in accreditation. According to the report of RUSA (2013) accreditation is very important for attracting excellent students to an institute, but unfortunately as of August 2013 less than one third (179 out of 574) of all universities and 13 per cent (5156 out of 35539) of eligible institutes have been accredited so far (RUSA Report 2013, 39).

- **Lack of fruitful co-operation and collaboration between private and public sector of institutions:** Role of private sector in higher education is an issue of debate because majority of the HEIs are driven under the private sector. Public–private partnership model of development in each and every sector is working around the world with flying colours. There was a dichotomy in public and private sector for long, but in this contemporary challenging world the goal of higher education cannot be achieved alone. In the circumstances created by globalization India will have to ensure national strengths through international cooperation.
- **Lack of business-oriented perspective of most of the Indian higher education setups:** Most of the Indian HEIs are traditional in nature. There is no proper positive co-relation between the demons from the marketplace and capabilities of graduating students. Smart, creative and skilled people should be given opportunities to teach, and there should be a strong tie-up between HEIs and industries. Business-oriented approach in professional higher education must be developed to empower the nation.
- **Imbalance between inbound and outbound students:** In most of the Asian countries there is an imbalance between inbound and outbound international students. Some of the Asian countries like China and Japan are successfully concentrating on inbound international policy. America, Japan, Germany and many other countries are sending their students to China for higher studies. India is facing a big mobility imbalance in case of inbound and outbound of international students. The number

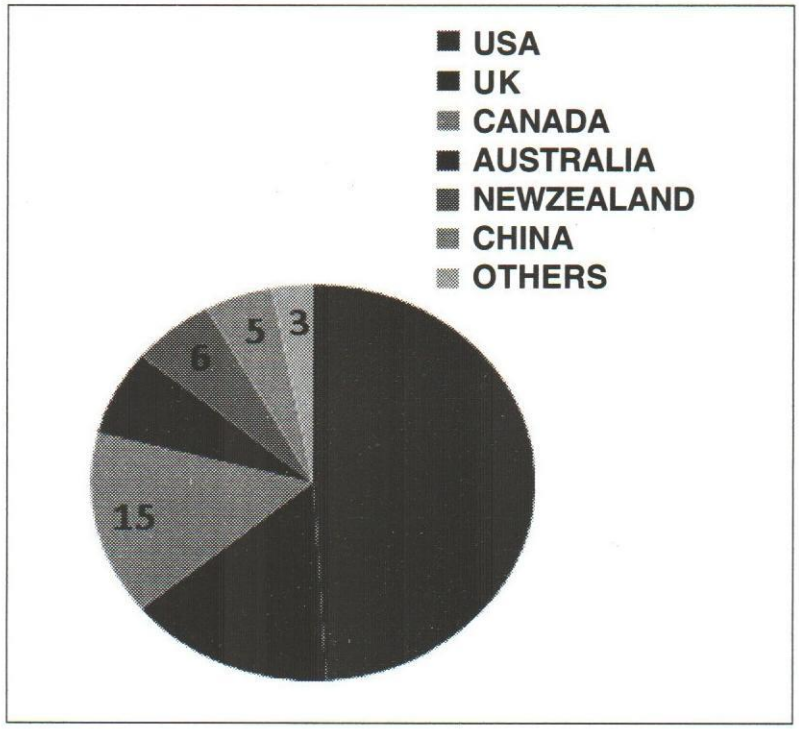

Figure 2: Outbound Students from India (2012) by country of destination (in per cent)
Source: UNESCO (Cited in FICCI H.E. Report 2014)

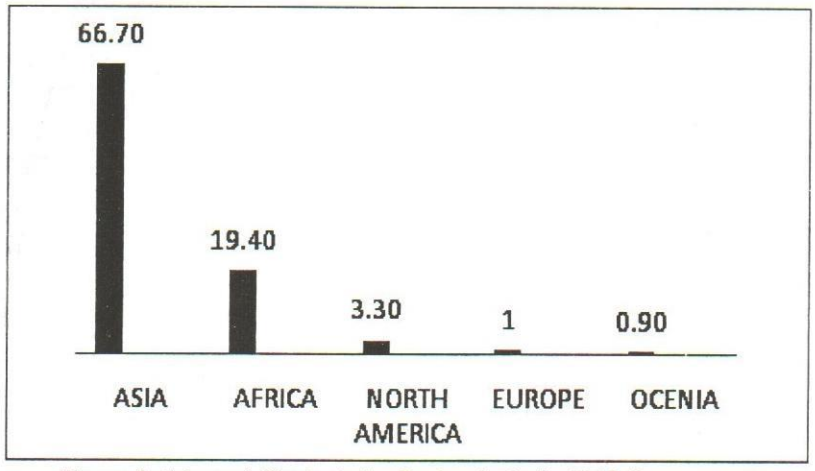

Figure 3: Inbound Students by Region in India 2012 (in per cent)

Source: UNESCO (Cited in FICCI H.E. Report 2014)

of inbound students was 31,000 while outbound number was 1,90,000 in 2012, which is not satisfactory.

Figures 2 and 3 reveal that the majority of inbound students are coming from Asia and outbound students are highly concentrated in America. It has been seen that over the years, most of the international students come from China and India, while the most favoured destination has been America. India attracts students from all over the world but majority are from regional countries. India is unable to attract more than 1 per cent students from European countries, while 66.70 per cent of the international students coming to India are from Asia. India's neighbour China is attracting a big share of international students.

- **Lack of internationally recognized institutions in India:** Contemporary era is globally interconnected and the whole world has changed into a village. Global ranking and reputation of an institution influences its internationalization process. India has very few internationally recognized institutions. Times Higher Education World University Ranking (2016–17) report reveals that there is not a single Indian educational institution in top 200 lists. Only two HEIs — IISc Bangalore is in under 201–250 group and IIT Bombay is under 351–400.
- **Internationalization in India is mostly limited to mobility of students only:** Internationalization is a broad concept; it is not just mobility of the students abroad. Rudzki (1995) has brilliantly defined the broad features of internationalization of higher education as follows: 'Internationalization is a defining feature of all universities, encompassing organizational change, curriculum innovation, staff development and student mobility, for the purpose of achieving excellence in teaching and research.'
- **Most of the students are coming to India from**

Table 1: Top 10 inbound students source nations for India

Rank	Country	No. of Students	Rank	Country	No. of Students
1.	Nepal	5,481	6.	Sri Lanka	1,115
2.	Bhutan	2,274	7.	Iraq	957
3.	Iran	2,131	8.	U.S.A.	782
4.	Malaysia	1,726	9.	Tanzania	777
5.	Afghanistan	1,599	10.	U.A.E.	748

Source : CII & AIU Report 2014 page no. 33 Jane Knight.

neighbourhoods, Asia and Africa: India has had a tradition of hosting international students since 500 BCE, but this glorious tradition has taken a down turn during the medieval period and it continued until Independence. During the last few decades international students have started to come to India but the main source is Asia and Africa. Asia contributes to around 70 per cent of the total international students coming to India.

Table 1 reveals that most international students come to India from Nepal — around 1/6 of all the international students in India. USA is the only Western nation which is under top ten. India must prepare a policy for attracting a larger number of international students from all over the world and quality higher education is the only way for doing so.

India's most competitive neighbour China is successfully implementing the internationalization strategy and attracting a good number of students from the all over world. According to Ministry of Education, China there is around 377054 international students studying with an annual increase of 5.77% in 2014. In 2015 China received 397,635 International students from all over the world and sends around 523,700 students abroad for higher studies. Even United States under its '100000 strong initiatives' aims to send 100000 students to China by 2014. In comparison to China, India is not successful in attracting international students. This is remarkable that most of the international students coming to India are from Asian countries specially from neighbour countries.

Source: U21, Ranking of National Higher Education.

According to the report of U21, as given in Figure 4, India stands at the second-last position with rank 49 among 50s. Most of the Western nations have a clear standpoint for enhancing internationalization in their higher education system. The United States–India Educational Foundation (USIEF) in United States and British Council in United Kingdom are established agencies for promoting higher education abroad. Australia, Japan, Germany, Russia and China are excellent examples of nations who have successfully internationalized their higher education abroad. With the beginning of 21st century, higher education in India has expanded exponentially, both with respect to increase in proportion of students as well as HEIs. The number of universities and colleges at the time of Independence were 26 and 695, currently we have risen to about 700 universities and 35,539 colleges. This 20-fold and 46-fold increase in the number of universities and colleges is noteworthy (RUSA Report, 2013, p. 8). More than 4 million international students are studying abroad but India is able to attract less than 1 per cent of the total students, while the neighbouring China is successfully attracting around 10 per cent of total foreign students. China has set up a goal for attracting 5 lakh international students annually by 2020. India too must have a strong vision and policy for this.

7. Strategies and Policies to Empower Higher Education in India

The need to inculcate internationalization in higher education was realized by University Grant Commission (UGC) in mid-1990s, when it appointed a Study Group to examine the various aspects of higher education in India. In the Tenth Five-Year Plan, the UGC has recognized internationalization as a priority area and set up an expert committee for the promotion of Indian higher education abroad to encourage mobility. In the Twelfth Five-Year Plan it has been mentioned that a 'move towards internationalization of higher education is imperative and there should be creation of alliance, networks, clusters, and consortia of academic institutions amongst themselves and with the research institutions and industry should be facilitated in order to create a self-governing system' (RUSA Report, 2013–14, p. 7).

The Indian Government is taking many new initiatives to stimulate the universities and colleges to enter into collaborations and co-operations with reputed international universities to gain knowledge, information and experiences to explore many other opportunities. The thrust for internationalization was manifested during two

roundtable conferences organized in 2001 in Mysore and Amritsar. Further, in 2003 UGC identified internationalization of higher education as a thrust area and launched Promotion of Indian higher education abroad (PIHEAD) (RUSA 2013, p. 138).

The Association of Indian Universities (AIU) decided to set up a Task Force to examine the relevant issues related to internationalization of higher education at the 78th annual meeting of its general body, jointly organized by AIU and Venkateshwara University, Tirupati, on 21 November 2003.

The UGC formed a Study Group in 2006 that came out with the report 'Modalities to Provide Educational Opportunities to Foreign Students to Generate Resources for Higher Education', suggesting setting up of a 'Consortium for International Education' either at UGC, AIU or at any university in Delhi (University News, September, vol. 53 no. 36).

The India–UK Education and Research Initiative (UKIERI) is an important strategy which encourages research partnership and academic exchange and research collaborations between these two countries. The Government of India launched a programme titled 'Global Initiative of Academic Networks' (GIAN) for promoting scientific and technological capacity to develop global excellence. In Indian universities 10 per cent seats are reserved for foreign students and 5 per cent for NRI/PIO students. The Indian Government and AIU are encouraging universities to collaborate with top-ranked institutions of the world. India has signed MoUs with 51 Countries from every region, which shows progress in the process of internationalization of higher education (Annual report 2, 2014–15).

8. Conclusion

The government and the institutions must plan for a more collaborative exchange with global partners in the sector of higher education. The best practices should be shared because this will also help in the maintenance of quality and standards of higher education. The goal of internationalizing the whole higher education system in India is very challenging due to diversified nature of institutions, teachers and students, especially in remote areas. The census of 2011 shows that 69 per cent people are living in rural areas where higher education is not more than getting a degree. Most of the colleges in rural areas don't show their interest in accreditation and excellence, and don't appreciate smart ways of teaching and learning. Strong willpower is the only key of the government as well as professors of HEIs, which will provide ground for an effective and internationalized higher education system. The move towards enhancing the industrial experiences of students studying in professional higher educational institutions is imperative. India will have to consciously move towards enhancing capabilities of professors, scholars and students for ensuring excellence and productivity in higher education.

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"Intelligence plus character-that is the goal of true education."

– Martin Luther King Jr.

Excellence in Higher Education: Need of the Hour

J D SINGH

Education in India is seen as one of the ways to upward social mobility. The higher education system in the country has grown in a remarkable way after the Independence to become one of the largest systems of its kind in the world. We now live in an increasingly diverse, globalized, and complex, media-saturated society. The change in educational practices and tools over the last ten years has been truly remarkable. Despite that the system has many issues of concern at present, like those of financing and management, inadequate infrastructure, technology and research, access and equity, safeguarding national academic standards, ethical relevance, improvement and enhancement of quality of higher education together with the assessment of institutions and their accreditation. Under-investment in libraries, information technology, laboratories, and classrooms makes it very difficult to provide top-quality instruction or engage in cutting-edge era. These issues are important for the country, as it is now engaged in the use of higher education as a powerful tool to build a knowledge-based information society of the 21st century. It becomes very clear that the modern-day classroom needs are very different from those of conventional classrooms. With significant improvements in school education and higher education programmes such as Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and Rashtriya Uchchattar Shiksha Abhiyan (RUSA), it is the right time to address the higher education system in the country. The urgent need has been to address the shortcomings of the entire process of converting youth into educated and well-groomed citizens. At present, there is an important need to improve our quality of higher education for transforming and making India digital.

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1. Introduction

Education in India is believed to be one of the ways to upward social mobility. Good education is seen as a stepping stone to a high-flying career. India possesses a highly developed higher education system which offers the facility of education and training in almost all aspects of creative and intellectual endeavours. Recently, the growth of higher education in India has been phenomenal. This field has evidenced an extraordinary increase in the number of universities/university-level institutions and colleges since Independence. The number of universities has increased 40 times from 30 in 1950 to 802 universities (47 central universities, 364 state universities, 122 deemed universities and 269 private universities) as per the University Grants Commission (UGC) list of 29 June 2017. The Indian higher education system has undergone massive expansion in quantity and quality in independent India to establish several universities and colleges all over the country, thus generating and disseminating knowledge to the common Indian. The rapid growth in the area, both in terms of enrolment and number of institutions has thrown up new challenges of maintaining quality of higher education. Various new initiatives are being taken by state and central government to increase the gross enrolment ratio (GER) in higher education. However, in 2015–16, India educated approximately 24.5 per cent of its young people between the age group of 17–23 enrolled in higher education, as compared to 36 per cent in China and 91 per cent to South Korea. At present, the world-class institutions are mainly limited to the Indian Institutes of Technology (IITs), the Indian Institutes of Management (IIMs), and perhaps a few others such as the All India Institute of Medical Sciences (AIIMS) and the Tata Institute of Fundamental Research (TIFR). There are a small number of high quality institutions, departments, and centres that can form the basis of quality area in higher education. None of the

universities occupies a solid position at the top. A few of the best universities have some excellent departments and centres, but these universities and colleges are countable. These institutions have only 1 per cent enrolment of the student population. In the 21st century, all institutions and teachers play a significant role in shaping the lives and careers of their students. There is a great need to bring improvement in the higher education system and considerably improve the quality and number of institutes by developing more institutions with accreditation. Therefore, engagement with all endeavours of social and national reconstruction is required to improve the quality, keeping in view the emerging global trends in education and the overall needs of the people.

2. Present Scenario of Higher Education

India's higher education is managed by the UGC and various other councils. The UGC, set up under the UGC Act in 1956, has been empowered to promote and coordinate university education in India and also approve the release of grants to universities and research organisations. The UGC is responsible for coordination, determination, and maintenance of standards of education. Various professional councils are responsible for recognition of courses, promotion of professional institutions and provision of grants to undergraduate programmes. At present, the world-class institutions in India are limited. The prevailing higher education system is inadequate with respect to both quality and content. Most of the Indian colleges and universities lack high-end research facilities. The higher education scenario in India today is a cause for serious concern.

Educational research encompasses many different studies, all of which attempt to understand the learning and educational processes better and improve it. The National Assessment and Accreditation Council (NAAC) and the Commonwealth of Learning (COL) started to work together responding to this concern for quality assurance in teacher education. In the last six decades, the higher education sector in India has witnessed exponential growth, both in terms of the number of institutions and the rate of enrolment. While talking about the growth in student enrolment, the recent UGC report states that in 1950–51, there were only 3,97,000 students enrolled in all disciplines in 750 colleges affiliated to 30 universities. Now, in 2017, India had 802 universities, over 40,000 colleges with annual enrolment of more than 35 million students in various higher education institutes. It has one of the largest higher education systems in the world comprising numerous standalone technical/professional institutions. Today we live in a technology-driven environment experiencing rapid changes in technology tools. The higher education system in India currently represents a great contradiction. On one hand we have the IIMs and IITs that rank among the best institutes in the world, and on the other there are number of schools and colleges that do not even have the basic infrastructure. Even more than 70 years after Independence we are far away from the goal of universal literacy. But on a positive note, Indian professionals are considered among the best in the world and are in great demand, with about 50 per cent of the Indian population below the age of 25 years, and more than 150 million people in the age group of 18–23 years. The structure of degree-granting institutions is complicated mainly due to affiliation and funding sources. More than 85 per cent of the students are enrolled in bachelor's degree programmes with a majority enrolling in the three-year B.A., B.Com. or B.Sc. degrees. Only one-sixth of all Indian students are enrolled in Engineering/Technology degrees.

The world has shrunk rapidly to a common platform of education and learning. Today, Indian higher education institutes offer a wide array of courses in various streams and some of these courses have gained global recognition. India has also gained a foundation in the field of research. It is heartening to know that some Indian universities and institutes like IIT, IIM and Jawaharlal Nehru University (JNU) have been listed in the world's top two hundred universities. In the field of finance, Indian School of Business (ISB), Hyderabad has been ranked number 12 in the global MBA ranking by *Financial Times*, London. The National Knowledge Commission, a high-level advisory body to the Prime Minister, has projected a requirement of 1,500 universities and 45,000 colleges to achieve this target. Higher education has given ample proof of its viability over the centuries and of its ability to change and lead to progress in a society.

Despite the recent growth, we have not yet touched upon the idea of miserable global impact of our institutions pertaining to research and enrolments from across the globe. The Times Higher Education World University Rankings (2016–17) list the 980 top universities in the world, making it the best global league table till date. It is the international university performance table to judge world class universities across all of their core missions — teaching, research, extension, knowledge transfer and

global outlook. The *Times Higher Education* magazine, UK, world's most reputed ranking list, shows the world's top 100 universities purely based on academic prestige. According to the London Times Higher Education World University Rankings powered by Thomson Reuters (2016–17), no Indian university features among the top 100. But universities in East Asia have been included in the first 100. Hong Kong has three, ranked at 43, 49 and 76; Singapore two ranked at 24 and 54 and South Korea two ranked at 72 and 89th position. Notably, China's Peking University and Tsinghua University are ranked at 29 and 35 respectively. There is no Indian university in the rankings from 100 to 200. In between 201 to 300, there are only two universities — Indian Institute of Science (IISc), Bangalore and IIT, Mumbai. But, there is good news if we talk about The Times Higher Education Asia's university rankings 2017 — India has 33 institutions in the top 300 compared to 16 in the top 200 last year. Seven of these institutes are new entrants, and eight are in the top 100. Times Higher Education magazine has also for the first time released a list of India's top 10 universities. According to their Reputation Rankings, IISc, Bangalore, is in the first position, followed by IIT Bombay, AIIMS, IIT Kanpur and IIT Delhi. The University of Delhi takes the sixth place — the first full-fledged university on the list

According to the Quacquarelli Symonds (QS) World University Rankings (2017) IISc, Bangalore scored 152, IIT Delhi is ranked globally at 185 with a 49.4 per cent score, IIT Bombay making it to 219, and IIT Madras to 249. In contrast, China has four universities in the top 100 with Peking, Tsinghua, Fudan and Shanghai Jiao Tong University placed at 24, 39, 43 and 61. Quite shockingly, no Indian university has made it to the top 100 universities of the world today. In India, we have clear evidence that quality is not up to the mark and this is reflected when most of the graduates do not end up finding a job. During the last few years, universities have increased manifold and colleges imparting higher education have mushroomed all over our country. This growth, lured by placements in software organisations, donations to obtain seats and mafias running educational institutions has become the order of the day. Most of the Indian higher education institutions offer outdated programmes with inflexible structures and content. Having realised the importance of the higher education sector, the government has now increased its focus by introducing a number of reforms to straighten out some key threats.

3. Problems and Challenges in Higher Education

The aim of higher education is to prepare a person to play his part well, as an enlightened member of the society. Various commissions and committees appointed by the central and the state governments in recent decades have invariably emphasized the need for quality education. The National Policy on Education (NPE, 1986) was followed by a Programme of Action (1986), which provided details about the needed transformation of policy into action. According to Rabindranath Tagore, 'higher education is that which does not merely give us information, but makes life in harmony with all existence'. During the last decade, new thrusts have been posed due to rapid changes in the educational, political, social and economic contexts at the national and international levels. The NPE (2016) is being formulated this year by the MHRD after three decades of last policy. This in itself is a remarkable step, as we know that education is the most important vehicle for economic, social and political transformation. It reiterates the role of education in inculcating values, providing competencies and skills to the citizens, and in enabling them to contribute to the well-being and strength of the democracy. It has significant advantages in the race of 21st-century knowledge. But the severity of challenges that the system faces is exceedingly high, daunting, and at times looks invincible. The challenges confronting the Indian higher education system are also very demanding, complex and have different aspects. One of the fundamental weaknesses of the system is the lack of transparency, and recommendations have been made to mandate high standards of data disclosures by institutions on performance. Our former President Pranab Mukherjee recently called for a serious discourse on how the quality concerns in higher education should be addressed at the earliest.

About 62 per cent of the universities and 90 per cent of the colleges were average or below average in 2010, on the basis of their NAAC accreditation. Almost two-thirds of our universities and 90 per cent of the colleges are rated below average in quality parameters... Unattractive compensation packages, lengthy recruitment procedures, and working environment not conducive to retention are some other problems faced by higher educational institutes. As a result, a substantial portion of high-ranking students who could fill up such assignments prefer to work elsewhere or go abroad. The quality of education is always related to increase in the nation's wealth, GDP and

prosperity. India spends only 3.65 per cent of its GDP on education as per the 2016–17 budget. At present, India's gross enrolment ratio (GER) of higher education is close to 24 per cent, which is below the world average of 30 per cent. There is also a big challenge before the Indian government to increase the GER in higher education to 30 per cent by 2020 from the current level of around 24 per cent, and this would require an additional capacity of about 10 million to be created over the next five years. It's an ambitious goal, but still well shy of the 55 to 60 per cent enrolment rate that is common in developed countries. With the explosive growth of knowledge in the past century and with the development of handy tools of information and communication technologies as well as of other scientific innovations, competition has become a hallmark of growth all over the world. India's main competitors especially China and South Korea are investing in large and differentiated higher education systems. They are providing access to big numbers of students at the bottom of the academic system while at the same time building some research-based universities that are able to compete with the world's best institutions. Infrastructure facilities in universities and colleges range from insufficient to dismal. Classrooms are often unattractive and laboratories have inadequate stock, leading to poor teaching. It is estimated that barely 20 per cent of the higher education institutions have the basic minimum laboratory equipments. Courses are outdated; faculty is inept, illiterate to the changes around them. Steady electric power supply is not available in many universities and computerization, where it exists, is generally dependent on poor communication lines.

Unfortunately, we lack immensely in terms of quality output from our higher education institutes. This can be confirmed from the fact that barring exception of few institutes mentioned earlier, very little world class research gets published from other institutes, very few new innovations comes from Indian soil. In India, the number of research parks is a single digit and patent application from Indian researchers received very little in comparison to China and Japan in 2016. There is 40 per cent and 35 per cent shortage of faculty in state and central universities, respectively. India's relative citation impact is half the world average. Many private colleges levy charges midway through the course of study by when the student has no choice but to pay up; they advertise achievements of the college which are false; they promise to offer courses without any intention to actually do so. This need to be severely punished has also a big challenge in higher education. The Goods and Services Tax (GST) exemption on procurements is available only to school-level education but services to higher education are not GST-free. Initially, a service tax of 15.5 per cent was levied on the higher education courses, which has now been raised to 18 per cent. In effect, higher education will get costlier by about 3 per cent and will hit the courses. There are currently around 20 separate education bills awaiting approval in the Indian Parliament, with the majority of them focused on higher education. In the current world scenario, new inventions, modern technologies, growing economy and competition are the order of the day.

In this emerging global era, India has another issue to position itself as a knowledge-driven economy. It is with the aim of providing solutions to these challenges and setting in motion a process of in-depth reform in higher education worldwide. A new strategy for meeting this challenge needs to be evolved with complete policy commitment on the part of the government, because service sector export requires a steady supply of highly skilled manpower which can only be supported by a strong higher education system.

4. Some Measures for Improving Quality of Higher Education

Higher education is of vital importance for the country, as it is a powerful tool to build a knowledge-based modern society. The role of higher education in the growth and progress of a nation has been well recognised for centuries. The importance of education cannot be undermined in a country like India. Higher education is the backbone of the Indian economy and society. There are many areas where we need to reform higher education. In recent times, there has been a growing interest in world-class universities amongst scholars, researchers, administrators, policy makers and implementers. Our main aim must be to nurture excellence instead of spending a disproportionate amount of energy trying to curb the lack of it. It is the responsibility of the UGC to maintain the quality of our higher education and research for knowledge- and skill-based society. The country needs skilled and trained faculty and researchers for making India a superpower. For this, there are some possible measures for improving quality in higher education:

- Indian higher education institutions and regulators should restore coherence, transparency and confidence in the higher education system both at home and abroad.

- Emphasis should be laid on not just increasing the number of higher education institutes but on centre of excellence. Great emphasis must be laid on quality research, good infrastructure and facilities. Achievers in every field should be rewarded adequately.
- In India, the first step towards improvement should be taken at the school level with aptitude tests being introduced to know where the interest of the student lies. These students should then be encouraged to join those fields of interest.
- Quality should always be a core part of productivity conversations. India is a promising investment market and itself has to step up its efforts to create investor's confidence and build an enabling investment climate.
- The Indian government should take steps to give more students access to a college education. The goal now is to increase the number by more than one and half the number of 18–23-year-olds who enrol in higher education to 30 per cent till 2020. According to the HRD ministry, to achieve this goal, India will need to add more than 1,500 new universities and 45,000 colleges in the coming decade.
- Laboratories should be updated and obsolescence in equipment/facilities should be taken care of on a regular basis. Innovative practices related to examination reforms should be empirically tested and institutionalised. All the examination processes should be computerised and recent advances in ICT should be exploited to make the process automated and efficient.
- Libraries should be fully equipped with the latest books, journals and periodicals. A library must be online and conducive for serious study. High quality e-text books, encyclopaedias, e-reference books, e-research papers and e-content in different languages should be made available free of cost to genuine learners.
- Most of the areas identified for export of higher education are directly concerned with industries. Therefore, central and state governments should introduce a range of programmes and incentives designed specially to improve the links between universities and industries. The universities and national institutes of higher learning should design their courses in collaboration with the industry standards and such courses should be updated regularly, maybe every year according to the need.
- Multi-disciplinary mission mode research and innovation programmes should be evolved in association with arts, humanities and social sciences, which should directly benefit the society. In order to achieve this, every university should allocate a certain proportion of their annual budget for research and innovation.
- Public–Private Partnership (PPP) is most essential to bring in quality in the higher education system. The UGC and ministry of HRD should play a major role in developing a purposeful interface between the universities, industries and national research laboratories (NRLs) as a step towards PPP.
- The RUSA and state higher education councils should play a key role in undertaking the process of planning, execution and evaluation, in addition to other monitoring and capacity-building functions.
- The UGC should, likewise, produce and publicise ratings of and information about all universities and institutes of higher education. This should be a detailed, annual exercise and prominently available on a website.
- There must be better mechanisms to evaluate the quality of teaching. Each higher education institution should define its mission according to the present and future needs of the society to reach the necessary level of sustainable and environmentally sound economic and social development.
- There should be regular monitoring and evaluation of teaching and cutting-edge research in the universities and other institutions of higher education.
- To remain competitive, India must grow its pool of skilled workers by improving and expanding access to higher education.
- Education is a bare necessity in the present time, so the higher education sector should be left free of charge or not more than 5 per cent tax should be levied on it.
- Working facilities and workload of teachers should be as per the international norms. Knowledge and skills must be developed with a view to provide relevance and meaningfulness. Teachers should be encouraged to attend various conventions,

conferences, seminars, webinars and workshops in their disciplines to update their professional knowledge and skills.

- E-learning appears to be a fast emerging mode of global entry in the present time. The universities and other institutions of higher education can design their websites for offering online education worldwide.
- The need of the hour is to create an environment conducive for education and provide incentives to attract and retain high quality faculty, meritorious students, and high level of teaching–learning environment. India with its third largest higher education system can become an educational superpower through knowledge and skill development.

5. Conclusion

Higher education is of vital importance for the country, as it is a powerful tool to build a knowledge-based society in the 21st century. It is widely recognised that the existing database on higher education is inadequate and out of date. In this era, the global economy is very much dependent on the advanced technology and a high level of resource availability. The continuing development of values, knowledge and new skills throughout a person's life is important for individuals and society. In this era, all teachers can play a significant role in shaping the lives and careers of their students. Higher education can play an instrumental role in the achievement of these outcomes through the creation of knowledge networks, research and innovation centres, corporate-backed institutions, and support for faculty development. Society as a whole must support education at all levels, including higher education, given its role in promoting sustainable economic, social and cultural development. Recognising the above and the basic fact, the universities and colleges have to perform multiple roles, like creating new knowledge, acquiring new capabilities and producing an intelligent human resource pool, through challenging teaching, research and extension activities, so as to balance both the need and the demand. Creative solutions like online courses and foreign university partnerships can help India grow its higher education sector dramatically in the coming years. All initiatives must focus on both core academic subject mastery and 21st–century skill outcomes. In conclusion it can be said that the higher education system in India while critical for the development of the economy is afflicted with some serious concerns. It is a long way from a transformational change which is envisaged by various committees. To improve the quality of research in higher education in India, we have to identify some issues responsible for quality deterioration and implement remedies to achieve our goal. This is the time to reconsider steps to make digital India into a global hub through higher education for the advanced society. Now, the journey towards excellence in higher education has begun and we are on the right track, but there's still a long way to go.

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"The mark of higher education isn't the knowledge you accumulate in your head. It's the skills you gain about how to learn."

– Adam Grant

Influence of Organizational Justice on Managerial Effectiveness in Institutions of Higher Learning

NAVNEESH TYAGI, D. BABY MOSES AND SUREKHA RANA

After Independence, Indian higher education sector has observed tremendous growth in the number of universities and colleges. This growth has brought about a shift from collegial to managerial, and management issues that have now become more important and need of the hour for any institution. Thus managerial effectiveness of people in command is now considered a preeminent ingredient of prosperity and endurance for these institutions of higher learning in this competitive era of global scenario. To assess managerial effectiveness one has to understand what influences an employee's behaviour and attitude. Organizational justice is one of those important aspects that are used to explain a staff member's behaviour, like job satisfaction, employee turnover intentions, organizational commitment, etc., which are the prerequisites for managerial effectiveness. This study attempts to measure the impact of organizational justice on managerial effectiveness of managers, like director general, director, principal, and head of departments in institutions of higher learning. A structured questionnaire was used to collect data. Pearson correlation, structural equation modelling and stepwise multiple regression analysis were used. The findings revealed that faculty's perception of distributive justice and interactional justice has a significant positive influence on managerial effectiveness, while procedural justice did not seem to have a significant positive influence on managerial effectiveness of heads in institutions of higher learning. It is observed that by concentrating on justice issues, institutions and managers may be able to create a healthier and more productive workplace and their overall managerial effectiveness can be enhanced.

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1. Introduction

The effectiveness of leaders depends, more than is generally realized, on the context around them. Over time, a leader's capability is shaped by the top team's quality, and by the capabilities of the organization. These can either provide invaluable support for the changes a leader wants to make or render those changes impossible. Hence the best leaders pay a great deal of attention to the design of the elements around them. In institutions of higher learning, employee policies and programmes are formed on centralized bases. While the educational policies and procedures play a significant role in mission accomplishment of institutions of higher learning, institutional heads are ultimately responsible for implementation of such policies and procedures. There appears to be a huge discrepancy among employees with regard to distributional, procedural and interactional fairness during the course of such implementations. When employees believe that the workplace is unfair, they begin distrusting organizational leadership. When leaders choose to ignore this distrust, employee morale and motivation suffers.

The higher education sector has witnessed tremendous growth in the number of universities and colleges from 20 in 1950 to 677 in 2014 (MHRD, 2017), i.e., 34 times. Yet this sector is striving hard to discover new ways for survival and development of its institutions of higher learning. These institutions are constantly guided by persons in leadership positions (vice-chancellors, director-general, director, principal, and chairpersons etc.) for future progression and achievement of its overall objectives. The continuous changes and increasing

demands made on the education sector have modified the roles and responsibilities of these institutional heads, and an increasing requirement for the development of core managerial competencies has been felt among them. These managerial leaders have to deal with senior management, staff members, external agencies and other stakeholders, and hence have to act more as managers than academicians. Potgieter, Basson & Coetzee (2011) stated that higher education is increasingly functioning on the same principles and requirements as private and corporate sectors, and assumed that the competencies required for managerial effectiveness by institutional heads should correspond to those in the corporate sector. The institutional head's role was described as that of an academic middle-manager in Hancock and Helliwell's study (2003).

Goc (1994) has used the extent to which the leader's group or organizational unit performs its tasks and attains its objectives as a criterion for measuring managerial effectiveness — an important factor that is conceptualized in terms of competencies (Shipper et al., 2003), the motivation for doing work and work environment (Sethi and Nicholson, 2001). As stated by Cawood (1992) the importance of people, who can lead masses has been increased to survive the effect of current and future changes. One must be highly adaptive to be effective. In the context of education sector, effectiveness is measured in terms of academic achievements, increase in teaching staff's effectiveness and improvement of students' outcome through managerial actions and behaviours of people at managerial leadership positions. But they alone cannot transform everything and require people with determination and zeal. Therefore, it is crucial to understand those behavioural variables that contribute significantly in forming favourable behaviour and attitude, like employees' organizational commitment, job satisfaction, turnover intentions, organizational citizenship behaviour, etc. Among the various aspects, organizational justice is the one that is used for explaining such behaviours and attitudes. Earlier researchers had explained organizational justice as an important variable and influential force for staff members' turnover intentions, job satisfaction, organizational citizenship behaviour (Nadiri and Tanova, 2010), psychological empowerment, and organizational commitment (Tsai, 2012). Perception about institutions being fair can make the staff members react positively and work effectively, which ultimately influences managerial effectiveness of its disciplinarians.

2. Conceptual Framework

2.1. Organizational Justice

Organizational justice was depicted as the dominant factor for organizational life by Cremer (2005) and has a significant negative influence on employees' turnover intentions (Rastgar, 2013). This aspect has long been researched as an explanatory variable in human resource management that influences outcomes such as job satisfaction, organizational citizenship behaviour, withdrawal and organizational commitment behaviours (Charas & Spector, 2001). It is the employees' perception of fairness in organizational decision-making as per Cropanzano & Ambrose (2001). Cropanzano and Greenberg (1997) described it as a social construct where an act is considered to be just if it is so perceived by the individuals. Organizational justice builds trust, loyalty, commitment, and customer satisfaction, and improves job performance (Cropanzano et al., 2007). A positive and significant role of justice in turnover intentions, job satisfaction and organizational citizenship behaviour was demonstrated by Nadiri and Tanova (2010). They suggested that managers should be sensitive to their decisions and the methods they use to reach these decisions,whichwould be perceived by their staff members. Researchers have categorized organizational justice underdistributive justice, procedural justice, and interactional justice (Erdogan et al., 2006; Zhang et al., 2009; and Klendauer & Deller, 2009). Usmani and Jamal (2013) investigated a significant relationship between distributive justice, interactional justice, temporal justice and job satisfaction. Existence of interactional justice shows due respect to employees, introduction of consistent criteria, and provision of timely feedback with appropriate and sincere behaviour by supervisors. Ismail (2014) indicated the mediating role of trust on organizational citizenship behaviour. Researchers have identified several negative outcomes and counterproductive behaviours of perceived organizational injustice like unethical actions and retaliations (Cohen-Charas and Spector, 2001), low job performance (Cropanzano et al., 2002), negative work attitude (Daly, 2003), theft and stealing (Greenberg and Scott, 1996), holding important information and hiding errors (Trevino & Weaver, 2001), additional conflicts (Cropanzano and Baron, 1991), and inclination to litigate against their employer.

2.2. Distributive Justice

The first reference of distributive justice came from Moorman (1991), who describes it as the fairness of outcomes which an employee receives (e.g., pay and rewards) from his organization. It is the fairness in distribution and allocation of resources among people (Greenberg & Baron, 2003). Distributive justice is a concept under which the distribution of all sorts of attainments like duties, opportunities, punishments/ rewards, status, wages and promotion among employees, on the basis of their similarities and differences, is explained (Greenberg, 1990; Foley et al., 2002). Rahim et al. (2001) noted that employees put on more cooperative conflict management styles with high distributive justice perceptions.

2.3. Procedural Justice

The term procedural justice was introduced by Thibaut and Walker (1975). Procedural justice is the perception of fairness of the means used to determine the amount of benefits (Folger & Konovsky, 1989). It demonstrates how justice works in the decision-making processes and affects mutual relationships among employees and with organizations as well (Korgaard and Sapienza, 2002). Employee's participation in the decision-making procedures in organizations and assumptions of control are very much desired in this regard (Yuvuz, 2010).

2.4. Interactional Justice

Interactional justice is the fairness in interpersonal treatment by the decision-makers (Ambrose et. al., 2002). Wat & Shaffer (2005) observed the perception of supportive and respectful supervisor bythe subordinates in the interaction processes. They found it as positively effective in terms of subordinates' trust in their supervisors. Interactional justice was described by Greenberg (1990) as the interpersonal treatment received by employees from decision-makers and the adequacy in explaining the formal decision-making procedures. He also classified interactional justice into informational justice that focuses on why a particular outcome came out in a certain fashion, and interpersonal justice that assesses the degree of treatment with dignity, respect and politeness. Organizational justice influences different attitudes of employees like absenteeism, job satisfaction, leadership, leader–member exchange, turnover intentions, role breadth, and trust, etc. (Greenberg, 2004; Wat and Shaffer, 2005; , udge and Coloquit, 2001).

2.5. Managerial Effectiveness

Managerial effectiveness as put forward by Reddin (1970) is the extent to which a manager or leader achieves the output requirements of the position. Three different perspectives of effectiveness were used to explain managerial effectiveness (Bartol and Martin, 1991; and Srivastava, 2000):

- The traditional model approach which stresses on the ability to define and reach goals
- The organizational competency-based approach which emphasizes on long-term future orientation that accounts for both internal and external influences in the organizations
- The individual competency-based approach which focuses on individual rather than organizations

Managerial effectiveness is a result-oriented phenomenon; therefore those activities and functions which contribute to goal achievements and results need to be focused on. Amanager should understand working people's psychological and social needs so as to satisfy them, because individual's perceptions and behaviours are related to each other. Chakrabarty and Kundu (1984) proved that individuals who are warm-hearted, dynamic, persevering, pragmatic, stable, easygoing, and emotionally mature have higher managerial effectiveness. Gupta (1996) stated that managerial effectiveness is the ability to carry out activities related to the position while achieving the organizational goals in terms of current and future potential. Nair and Yuri (2000) defined the concept as the ability to analyze peoples' problem, cultural imperatives, and organizational design that produces results. Restogi and Dave (2004) stated that managerial effectiveness is not only a personality characteristic, but also the performance and results achieved by the manager. But the situations and needs of people keep on changing; therefore one should be highly adaptive in order to be an effective manager (Hersay and Blanchard, 1977). Collectively, four aspects of management are covered by researchers in the functional paradigm of managerial effectiveness: people management, task management, strategic management, and relationship management.

2.5.1. People Management

Theories related to the management of people like human behaviour theory put emphasis on behaviour that is voluntary, learned and a function of its consequences

(Vroom, 1964). This involves obtaining trust of institutional members, image-building, example-setting, knowledge-sharing, communications, building friendly atmosphere, conflict resolution, discussing important policy matters, encouraging staff members' participation and their welfare, and fair allocation of work with well-defined roles and responsibilities. These have been proven helpful to raise favourable responses from the people because of the consequences those responses will bring about.

2.5.2. Task Management

Different views are available in literature regarding task management, for instance Taylor (1911) has focused on work processes, Maslow (1970) and Vroom (1964) focused on worker motivation, McGregor (1960) focused on management's assumptions (Theory X; people are lazy, dislike and avoid work theory; Theory Y-people are intelligent, creative, want to work), Ishikawa (1975) focused on power given to workers. Managerial leaders should be effective in delegation, planning, coordinating, motivating, appreciating and rewarding, creating conducive conditions, interacting and using tactics for task accomplishments. They must be competent in sorting out differences of opinions and allowing everybody in the staff to exhibit their talent. Rana and Srivastava (2014) examined the influence of work values on managerial activities around their position, achieving the results and developing further potential.

2.5.3. Strategic Management

In the past, managers typically took one section at a time and focused only on that. Then they moved all attention to another part. The problem was that an organization could, for example, have a good central administration and wonderful set of teachers, but the departments didn't synchronize at all. Effective managers must be forward looking and future oriented. They should maintain control over performance, i.e., control of work not workers, and devise effective methods to perform training need analysis and look out for training opportunities in order to grow and develop staff members. Contingency theory (Fiedler, 1964) asserts that when managers make a decision, they must take into account all aspects of the current situation and act on the key aspects at hand.

2.5.4. Relationship Management

Hersey and Blanchard (1993) in their tri-dimensional model explored situational correlation of relationship behaviour, task behaviour and readiness of the group. An effective managerial leader is able to influence his followers by switching behaviour, from task-oriented to relationship-oriented and back, based on the situation at hand. Brake's model(1997) of 'Global Leadership Triad' consists of four broader categories — relationship management, personal effectiveness, business wisdom, and in the core, the transformational self. In Mintzberg (1979) liaison role, the leader establishes formal and informal networks to gain information critical to the success of the organization. Scott et al., (2008) have identified a number of areas of focus in academic leadership that cut across the majority of leadership positions, including policy formation, managing relationships, working with challenging staff, involvement in various aspects of planning, and attending meetings.

That is why an effective manager should interact regularly to make effective relations, work with staff members to reach decisions and be easily accessible.

It is evident from the above discussion that academic leaders have to focus on employee behaviour (people management), work process and people's attitude towards work (task management), liaising among them (relationship management) with a futuristic orientation (strategic management) to adapt to changing situations.

Managerial effectiveness and organizational justice have been focused on by various researchers, but only a modicum of work has been done to focus on the relationship between organizational justice and managerial effectiveness. Hence this information was taken into account and the current study aims to fill this gap by exploring the direct influence of three types of organizational justice on four dimensions of managerial effectiveness. The following model was proposed through this research:

3. Objective of the Study

To investigate the influence of organizational justice on managerial effectiveness of heads of institutions of higher learning.

4. Hypothesis

Ha1: Organizational justice positively influences managerial effectiveness of heads of institutions of higher learning.

Ha2: Dimensions of organizational justice positively influence people management of heads in institutions of higher learning.

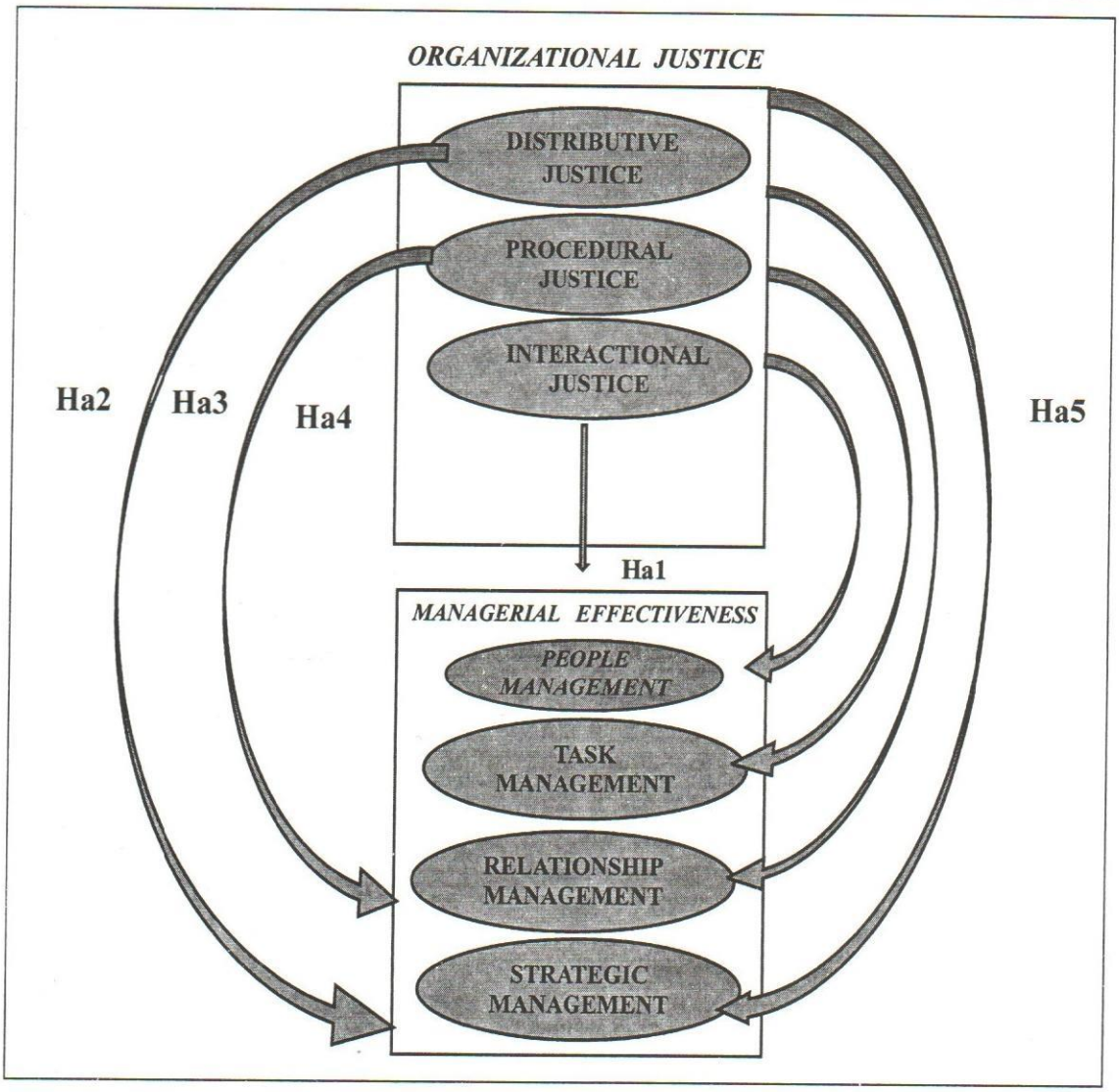

Figure 1: Influence of Organizational Justice on Managerial Effectiveness

Ha3: Dimensions of organizational justice positively influence task management of heads in institutions of higher learning.

Ha4: Dimensions of organizational justice positively influence strategic management of heads in institutions of higher learning.

Ha5: Dimensions of organizational justice positively influence relationship management of heads in institutions of higher learning.

5. Research Methodology Sample

To test the anticipated model a quantitative survey of institutional heads, viz., director general, director, principal, and heads of departments and their immediate staff members from institutions of higher learning in Delhi region was conducted. A stratified proportionate sampling technique was used for sample selection and subjects were personally contacted via e-mail and a structured questionnaire was given to 148 respondents. Four zones, i.e., north, south, east, and west Delhi, were used to select 37 respondents from each zone. Total 107 questionnaires were received that were found to be statistically usable for analysis, showing a response rate of 72 percent. The majority of respondents were married (72.9 per cent), males (53.3 per cent), within the age group of 30–40 years (47.7 per cent), working in government institutions (89.8 percent), had been working for less than 10 years, and at the present position from less than five years (42.1 per cent).

Table 1: Demographic Statistics

Particular	Category	Percentage
Gender	Male	53.3
	Female	46.7
Age	Below 30 years	28
	between 30–40 Years	47.7
	Above 40 Years	24.3
Qualification	Post Doc	10.3
	Doc	43
	Masters	46.8
Marital Status	Unmarried	27.1
	Married	72.9
Institution	Government	86.9
	Private	13.1
Service Length	Below 10 Years	50.5
	10–20 Years	29
	Above 20 Years	20.5
Tenure of present position	Below 5 Years	42.1
	5–10 Years	22.4
	10–15 Years	17.8
	Above 15 years	17.8

6. Tools Employed

6.1. Organizational Justice

The three dimensions of organizational justice, i.e., distributive, procedural and interactional justice were measured by using the scale originally developed by Niehoff and Moorman (1993). It is a 20-item scale which assesses the perceptions of faculty members on a 5-point Likert scale, whereby 1 refers to strongly disagree and 5 refers to strongly agree.

6.2. Managerial Effectiveness

To study managerial effectiveness a questionnaire was developed, a 31-item five-point Likert scale that describes how frequently the head of an institution behaves or acts the way stated in the item. The scale ranges from 5 for always to 1 for never. This was used to measure four dimensions of managerial effectiveness, namely people management, task management, strategic management, and relationship management. It examines the extent to which a head carried out the activities aimed towards achievement of institutional goals and how it makes the institution work effectively and productively.

First, the reliability and internal consistency for each scale and their dimensions were calculated separately.

A Cronbach alpha value above 0.7 is considered to be acceptable (Ribere, 2001). Table 2 presents the inter-item consistency scores/Cronbach's alpha for both the scales. Managerial Effectiveness Questionnaire has 0.96 alpha value and all its dimensions have alpha values above 0.7. Organizational Justice Scale has got an overall alpha value of 0.92 and the alpha value for all its dimensions were also found to be more than 0.7. All the calculated values are above the acceptable limit, hence it can reasonably be asserted that both the scales are reliable to be used in the study.

7. Results and Discussions

Institutional heads have to make decisions regarding vital aspects of the job to emphasize depiction of commitment, trust and empathy in behaviour among employees. Table 3 indicates mean, standard deviation and Pearson product moment correlation coefficient for all variables, dimension-wise. A significant positive correlation between all dimensions of organizational justice and managerial effectiveness has been observed. The correlation coefficient values vary from lowest (r=0.28) between people management and distributive justice to highest (r=0.92)

Table 2: Reliability Analysis

Variables	Overall Cronbach's Alpha	Dimensions	Cronbach's Alpha
Organizational Justice Scale	0.925	Distributive Justice	0.79
(N–104)	No. of Items = 20	Procedural Justice	0.76
		Interactional Justice	0.93
Managerial Effectiveness Questionnaire (N–104)	0.96	People Management	0.93
	No. of Items = 36	Task Management	0.90
		Relationship Management	0.77
		Strategic Management	0.72

Table 3: Descriptive Statistics, and Inter–correlation between Organizational Justice and Managerial Effectiveness

Variable	Mean	SD	DJ	PJ	IJ	PM	TM	SM	RM	OJ	ME
DJ	3.95	0.72	1								
PJ	3.43	0.83	0.48**	1							
IJ	3.67	0.89	0.52**	0.86**	1						
PM	3.51	.95	0.28**	0.40**	0.44**	1					
TM	3.91	1.08	0.56**	0.80**	0.80**	0.47**	1				
SM	3.33	.99	0.39**	0.55**	0.50**	0.34**	0.68**	1			
RM	3.7	1.03	0.51**	0.80**	0.74**	0.38**	0.87**	0.59**	1		
OJ	3.67	.74	0.69**	0.92**	0.96**	0.44**	0.84**	0.55**	0.79**	1	
ME	3.68	.85	0.52**	0.75**	0.76**	0.77**	0.92**	0.79**	0.81**	0.80**	1

**Significant at .01 level (2– tailed)
*Significant at the 0.05 level (2–tailed)
DJ– Distributive Justice, PJ– Procedural Justice, IJ– Interactional Justice, OJ–Total Organizational Justice, PM– People Management, TM– Task Management, SM– Strategic Management, RM– Relationship Management, ME–Total Managerial Effectiveness

between task management and organizational justice. The results reveal that as perceptions of organizational justice increase in faculties, managerial effectiveness also improved. The findings and correlation values tend to be high and give evidence to support the hypothesis at the preliminary level.

7.1. Ha1:Organizational justice positively influences managerial effectiveness

To test Hypothesis Ha1 multiple regression was applied to estimate the extent by which variance in managerial effectiveness is explained by the three dimensions of organizational justice.

In Figure 2 single-headed arrows indicate the standardized regression weights (0.37, 0.37, and 0.16) and double-headed arrows represent correlation between the variables. Managerial effectiveness of heads is primarily influenced by interactional justice (0.37), and procedural justice (0.37), followed by distributive justice (0.16). Thus hypothesis Ha1 is supported and the result is in line with the study of Fischer (2004), demonstrating employee's acceptance for organizational fairness to become more devoted to their organization and thus make more contributions to the institutions.

Tables 3 and 4 present these linear regression results in a tabular form to get a clear understanding of the findings.

The squared multiple correlation of managerial effectiveness and organizational justice is 0.64, which means that 64 per cent of the variability in managerial effectiveness is explained collectively by the three dimensions of organizational justice, thus further supporting hypothesis Ha1.

Organizational justice led employees to prefer organizational objectives and goals over personal goals. A fair treatment decreases employee's strain (Greenberg, 2006); it also helps in fulfilling four fundamental human needs, according to the multiple needs model suggested in the study by Cropanzano et al. (2001), viz., the need for control, the need for positive self-regard, the need for belonging, and the need for meaning.

The extent of relationship varies widely and independent variables are highly correlated among themselves, therefore to identify genuine and most critical predictor of different dimensions of managerial effectiveness, stepwise multiple regression technique was employed.

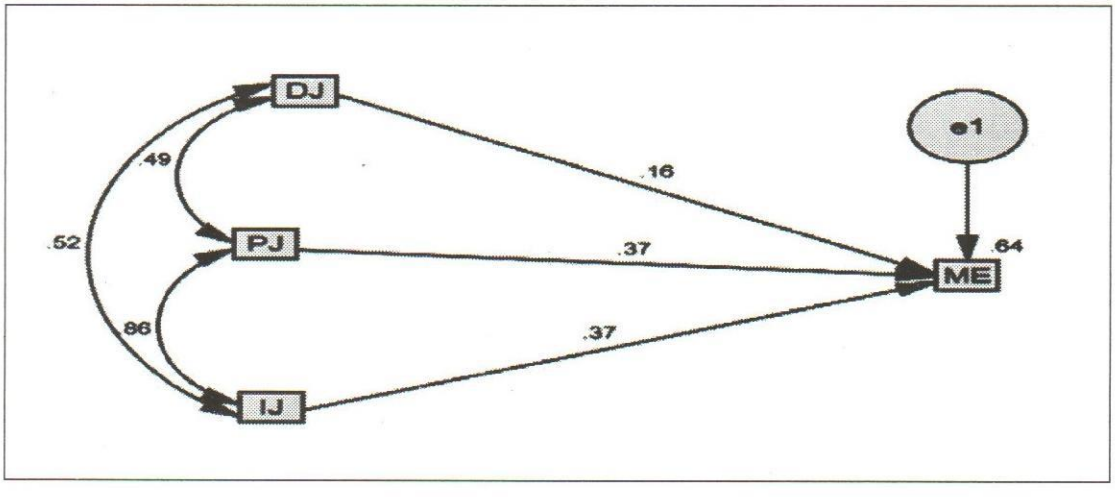

Figure 2: SEM for Influence of Organizational Justice on Managerial Effectiveness

Table 4: Model Summary of Linear Regression

Mode 1	R	R Square	Adjusted R Square	Std Error of the Estimate	F change	Sig.
1	.802[a]	.643	.633	16.077	61.862	.000

[a]Predictors: (Constant), IJ, DJ, PJ

Table 5: Beta Coefficients of Linear Regression

Model	Non–standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std Error	Beta		
1 (Constant)	11.055	9.078		1.218	.226
DJ	1.183	.509	.161	2.321	.022
PJ	1.935	.613	.367	3.159	.002
IJ	1.204	.391	.365	3.076	.003

[a]Dependent Variable: ME

7.2. Ha2: Dimensions of organizational justice positively influence people management

The dimensions of organizational justice were entered for stepwise multiple regression on different dimensions of managerial effectiveness. The results of multivariate analyses for all the dimensions of organizational justice are shown in Table 5, which reveals that the competency in people management is predicted by interactional justice with multiple R as 0.447, F=26.259, p<0.05, Beta=0.447, R Square=0.200. Procedural justice predicted people management with multiple R as 0.449, F=13.214, p<0.01, Beta=0.072, R Square=0.201. Distributive justice predicted people management with multiple R as 0.453, F=8.857,

Table 6: Stepwise Multiple Regression Analysis showing Managerial Effectiveness as Dependent Variable

Model	R	R Square	Adjusted R Square	SEM	F–value	D.F	B Value
1. Dependent Variable: People Management							
IJ	.447[a]	.200	.192	10.320	26.259	105	.447
IJ, PJ	.449[b]	.201	.186	10.387	13.114	104	.0385, .072
IJ, PJ, DJ	.453[c]	.205	.187	10.360	8.857	103	.357, .062, .071
2. Dependent Variable: Task Management							
IJ	.802[a]	.644	.640	8.489	189.530	105	.802
IJ, PJ	.831[b]	.691	.681	7.937	116.456	104	.432, .430
IJ, PJ, DJ	.845[c]	.715	.707	7.666	86.074	103	.361, .403, .180
3. Dependent Variable: Strategic Management							
IJ	.502[a]	.252	.245	2.598	35.308	105	.502
IJ, PJ	.558[b]	.318	.298	2.504	23.542	104	.087, .481
IJ, PJ, DJ	.573[c]	.328	.309	2.486	16.792	103	.027, .459, .152
4. Dependent Variable: Relationship Management							
IJ	.740[a]	.547	.543	2.103	126.944	105	.740
IJ, PJ	.810[b]	.655	.649	1.844	98.914	104	.184, .646
IJ, PJ, DJ	.818[c]	.670	.660	1.814	69.580	103	.129, .625, .140

[a]Predictors: (Constant), DJ; [b]Predictors: (Constant), DJ, PJ; [c]Predictors: (Constant), DJ, PJ, IJ

p<0.01, Beta=0.071, R Square=0.205. All the dimensions of organizational justice jointly explained 20 per cent of people management competency of institutional heads. People management involves employee participation, knowledge sharing, welfare, etc., by the heads. It effects employees' emotions and trust for their head.

The study of Cohen-Charas and Spector (2001) and Alexander & Ruderman (1987) also depicted the impact of employees' perception of organizational justice on people's trust in managers. Organizational justice has both positive and negative emotional consequences (Murphy and Tyler, 2008). People at managerial leadership positions deal with these emotions associated with the workplace to manage their workforce. The greater the perception of organizational justice, higher is the emotional positivity, which improves the commitment and dedication of staff members towards their work and organization that add to the effectiveness in their management.

7.3. Ha3: Dimensions of organizational justice positively influence task management

Task management in institutions is predicted by interactional justice with multiple R as 0.802, F=189.530, p<0.01, Beta=0.802, R Square=0.644. Procedural justice predicted task management with multiple R as 0.831, F=116.456, p<0.01, Beta=0.430, R Square=0.691. Distributive justice predicted task management with multiple R as 0.845, F=86.074, p<0.01, Beta=0.180, R Square=0.715. All the dimensions of organizational justice jointly explained 71 per cent of task management in the institution.Task management involves delegation planning, motivating, etc., by the heads to accomplish the task. If efficiency and productivity are involved, organizational justice affects performance (Cohen-Charash & Spector, 2001), and improved justice perceptions increase productivity and performance (Karriker & Williams, 2009). Thereby task management by institutional heads also improves.

7.4. Ha4: Dimensions of organizational justice positively influence strategic management

Competency in strategic management is predicted by interactional justice with multiple R as 0.502, F=35.308, p<0.01, Beta=0.502, R Square=0.252. Procedural justice predicted strategic management with multiple R as 0.558, F=23.542, p<0.01, Beta=0.481, R Square=0.318. Distributive justice predicted strategic management with multiple R as 0.573, F=16.792, p<0.01, Beta=0.152, R Square=0.327. All the dimensions of organizational justice jointly explained 32 per cent of strategic management. Strategic management involves futuristic approach of the heads. In order to adapt, employees should be motivated to acquire new skills and training by the heads. Deci, Koestner and Ryan (1999) depicted that organizational justice is related to intrinsic motivation while performing a task, which serves as its own reward. Organizational justice ameliorates intrinsic motivation of employees to fulfil future demands of their heads and institutions.

7.5. Ha5: Dimensions of organizational justice positively influence relationship management

Relationship management by institutional heads is predicted by interactional justice with multiple R as 0.740, F=126.944, p<0.01, Beta=0.740, R Square=0.810. Procedural justice predicted relationship management with multiple R as 0.655, F=98.914, p<0.01, Beta=0.646, R Square=0.655. Distributive justice predicted relationship management with multiple R as 0.818, F=69.580, p<0.01, Beta=0.140, R Square=0.670. All the dimensions of organizational justice jointly explained 13 per cent of relationship management. Relationship management involves conflict management and internal harmony in an organization or a group. If senior managers give utmost importance to serve and use justice, employees become more dedicated and committed (Charas and Spector, 2001) reducing conflicts and ensuring harmony.

Interactional justice has been found to predict all the dimensions of managerial effectiveness most strongly. The hypotheses Ha2, Ha3, Ha4, and Ha5 were retained at 0.01 level for predicting different aspects of managerial effectiveness on the basis of three dimensions of organizational justice in institutions of higher learning. It was estimated that organizational justice predicted strategic management most strongly (R square 0.43) followed by people management (R square 0.36) and task management (0.26). Institutions of higher learning need to focus on organizational justice issues primarily to enhance strategic management, people management, and task management effectiveness of institutional heads.

8. Conclusion and Implication

Over the years researchers in the field of social sciences have focused on different aspects of workplace psychology. Organizations and managers should try to enhance employee's perceptions of organizational justice. The present study was aimed at estimating the influence

of organizational justice on managerial effectiveness in institutions of higher learning. It revealed that there exists a significant influence of distributive justice, procedural justice and interactional justice on managerial effectiveness, which is in line with the findings of Rana and Rastogi (2015), and the strength of relationship between variables is medium to high. All the formulated hypotheses were approved through the analyses. Institutions that provide fairness in decision outcomes, formal decision-making processes and interpersonal treatment by decision makers (Greenberg, 2004; Wat and Shaffer, 2005) were found to possess managerial effectiveness, in their heads. Danaeefard and Baustani (2016) also studied the impact of organizational injustice and cynicism in fostering employee's misbehaviour within a public environment. This shows that motivation to serve in a managerial role at an institution of higher learning without extrinsic rewards and respect may decline or even become non-existent. Materialistic gain from fairness perceptions of employees progress momentum associated with learning, greater understanding and knowledge in this highly competitive environment and help people in managerial positions to move towards positive path and develop self, emotional literacy and alchemy to realize their potential and achieve organizational goals (Adekola, 2006; and Ajala, 2003) through and with people. Greater perceived organizational justice lead to higher level of employee job satisfaction and commitment (Ibrham and Perez, 2014), which leaves little space for conflicts, and if a conflict arises it can be sorted out more easily, providing uninterrupted flow of work towards achievement of organizational goals of managers.

It was seen that the institutional heads that possess high managerial effectiveness have an important place in the institutions, while those with low managerial effectiveness cannot hope to survive in these institutions. This leads us to conclude that managerial effectiveness of institutional leaders should be predicted in advance for estimating their stay in the institutions. The heads with less managerial effectiveness cannot be considered as a useful asset for any institution as they cannot survive in the competitive environment for long. The study has institutional implications also in suggesting institutions that by providing fairness and justice to their staff members they can enhance the ability of people in managerial leadership positions, to handle situations more constructively and manage the resources efficiently. The study will help institutions of higher learning in advancing their processes and prepare their leaders to facilitate organizational decisions regarding policies and procedures to maximize efficiency.

9. Limitations and Scope for Future Research

There are several limitations in this research that must be considered for future research. The size of the sample was small, which decreases the generalization of results. The findings are only limited to institutions of higher learning in the region of Delhi, the reason being lack of homogeneity in culture across India. Further, the study focused on institutions of higher learning only. Future researchers may conduct their study in other parts of India and indifferent levels of educational institutions, for instance primary and secondary education institutions may also be included. Length of the questionnaire was also a constrain for getting true responses as faculties were little reluctant and tired of filling a lengthy questionnaire. Other variables which significantly contribute to work psychology of staff members in higher education institutions may also be incorporated in future research.

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"Ensuring quality higher education is one of the most important things we can do for future generations."

– Ron Lewis

Biotechnology Higher Education, Funding & Start-ups: Indian Scenario

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Several higher education institutes and universities in India offer graduate, postgraduate, doctoral and post-doctoral biotechnology courses. Modern biotechnology plays a crucial role in both the elucidation of the molecular causes of disease and the development of new diagnostic methods and enhanced targeted drugs. These developments have led to the birth of a new economic sector — the biotech industry, associated mostly with small startup companies. For their part, the Department of Biotechnology, Ministry of Science & Technology, Government of India, came up with the Biotechnology Industry Research Assistance Council (BIRAC), with a primary focus to nurture the startups, facilitate industry–academia interactions, and promote student entrepreneurships in a large way. The established healthcare companies have also been successfully employing these modern techniques, collectively known as biotechnology, for many years, empowering and enabling the innovation ecosystem in the biotechnology sector. This article is intended to show a broad outlook of the Indian scenario of higher education, commerce and career opportunities in biotechnology and the use of research funds.

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1. Introduction

In the 21st century, Indian biotechnology sector is developing tremendously with 30 per cent profit per year, and with the help of biotechnology distinctive changes in technological, industrialization and marketing have been observed at international grounds (IBEF, 2017). India is among the top 12 biotech destinations in the world and ranks third in the Asia–Pacific region. Biotechnological industry grows simultaneously with information technology industry. However, India struggles to give its imperative contribution in the share of global biotechnology (Ghagane et al., 2016). The country has the second-highest number of US Food and Drug Administration (USFDA)-approved plants, after the USA, and is the largest producer of recombinant Hepatitis B vaccine (Ghagane et al., 2016). Out of the top 10 biotech companies in India, seven have expertise in bio-pharmaceuticals and three specialize in agri-biotech. India has no dearth of talent in biotechnology, as a number of institutions, both government and autonomous, provide the necessary opportunities for the students seeking to obtain a degree in this sector (http://blogs.scientificamerican.com). The Government of India has provided adequate scope to this sector by providing facilities for research and development (R&D), startups and BIRAC-BIG in the field of biotechnology (http://www.birac.nic.in; https://www.sbir.gov). Thus, in this paper we review the significance of biotechnology in India, higher education, the role of funding agencies, and utilization of newer opportunities to ignite the young minds.

2. Biotechnology: The Indian Context

The biotechnology sector of India is highly innovative and is on a strong growth trajectory. The sector, with its

immense growth potential, will continue to play a significant role as an innovative manufacturing hub. It is one of the most significant sectors in enhancing India's global profile as well as contributing to the growth of the economy (Chaturvedi, 2002). Biotechnology, globally recognized as a rapidly emerging and far-reaching technology, is aptly described as the 'technology of hope' for its promising of health, food, and environmental sustainability (Lee and Bozeman, 2005). The recent and continuing advances in life sciences clearly unfold a scenario energized and driven by the new tools of biotechnology. There are a large number of therapeutic biotech drugs and vaccines that are currently being marketed, accounting for a US$40 billion market and benefiting over a hundred million people worldwide (Naik, 2015; Li and Zhu, 2010). In addition to these, there are a large number of agri-biotech and industrial biotech products that have enormously helped humankind. The Indian biotechnology sector is gaining global visibility and is being tracked for emerging investment opportunities (Arafat and Saleem, 2017). Added to this is a decreasing appetite for risk capital in developed countries, which has led to a decline in the biotechnology sector in these regions, where survival lifelines are being provided by the lower cost research environs of the developing world such as India (http://www.israelbusiness.org).

For a country like India, biotechnology is a powerful enabling technology that can revolutionize healthcare, agriculture, industrial processing, and environmental sustainability (Khandekar et al., 2017). The Indian biotechnology sector has, over the last two decades, taken shape through a number of scattered and sporadic academic and industrial initiatives (http://www.hfsp.org). The time is now ripe to integrate these efforts through a pragmatic National Biotechnology Development Strategy. It is imperative that the principal architects of this sector along with other key stakeholders play a concerted role in formulating such a strategy. This is to ensure that we not only build on the existing platform but also expand the base to create global leadership in biotechnology by unleashing the full potential of all that India has to offer (http://gcgh.grandchallenges.org).

2.1. Higher Education

There are several undergraduate courses like B.Sc., B.E. and B. Tech., and postgraduate courses like M.Sc, M. Tech available in India in biotechnology. For B.Sc., B.E. and B.Tech. courses, the minimum qualification is 10+2 with science. Selection in these courses is done through entrance examinations conducted by the concerned universities. JEE is conducted by IITs for admission into B.E. and B.Tech. courses. There are separate entrance examinations at national and state level. For postgraduate courses, all science, engineering, technology, and medicine graduates are eligible. The selection to these courses is also done through entrance examinations conducted by the concerned institutions. At the postgraduate level there are specializations in the fields of agriculture, animal husbandry, veterinary, marine and bio-medicine. There are also advanced courses such Ph.D. and post-doctoral research in biotechnology (http://www.highereducationinindia.com). The era of 21st century has seen the advent of as well as the necessity for a new knowledge-driven society and a significant leap in higher education. Higher education generally refers to the level of education offered at universities, academies, colleges, seminaries, institutes of technology, and certain other collegiate-level institutions, such as vocational schools, trade schools, distance education learning, e-learning and career colleges, that confer academic degrees or professional certifications. Higher education is the most fundamental constituent and requires careful attention and evaluation to foresee prospective outcomes in a given country. It is indeed a reward for citizens — it gives knowledge and respect, makes an individual self-assured and provides a career. Higher education is for human capital theory, making an effective tool to develop science and technological capabilities that are required for a good standard of living in a global knowledge economy (Ding and Zeng, 2015). Furthermore, the comments on higher education are tweeted by many think tanks who have emphasized on the quality of higher education.

Many of our higher education institutions are simply not up to the mark. Too many of them have not kept abreast with the changes that have taken place in the world around us, still producing graduates in subjects that the job market no longer requires. Not one Indian university today figures in top 200 universities of the world, as pointed out by Dr Manmohan Singh, former Prime Minister of India (India Today, 2013).

It is projected that by 2030 India will be amongst the youngest nations in the world with nearly 140 million people in the college-going age group, one in every four graduates in the world will be a product of the Indian education system (Times of India, 2014), 50 per cent of the youth would be in the higher education system, at least 23 Indian

universities would be among the global top 200, six Indian intellectuals would have been awarded the Nobel Prize, the country would be among the top five countries in cited research output, its research capabilities boosted by annual R&D spends totalling over US$140 billion (Businessline, 2014).

Although there have been challenges in higher education in the past, these most recent calls for reform may provoke a fundamental change. This change may not occur as a direct response to calls for greater transparency and accountability, but rather because of the opportunity to reflect on the purpose of higher education, the role of colleges and universities in the new millennium, and emerging scientific research on how people learn (Reddy and Tang, 2016). These disparate literatures have not been tied together in a way that would examine the impact of fundamental change from the policy to the institutional level on university administrators, faculty and students. Now the time has come to create a second wave of institution building and of excellence in the fields of education, research and capability building. We need higher educated people who are skilled and can drive our economy forward. When India can provide skilled people to the outside world then we can transfer our country from a developing nation to a developed nation very easily and quickly (Reddy, 2015).

The challenges and issues faced by higher education and institutions are extremely diverse. The process of education is not merely digesting books. It is also about doing several co-curricular and extra-curricular activities that give a broader meaning to life in general and education in particular. We believe that opportunities and facilities for such holistic development are not enough in India. Though there is a lack of universities and institutes for education, one most important fact is that the quality of education is absent in higher education. There are very few teachers and their knowledge is insufficient. Outsourcing of education in terms of tutors and coaching classes is of great concern as it is affecting the interest and quality of lectures in colleges and universities. Similarly, outsourcing the projects also hampers research; students won't gain new skills and end up with poor results. Coaching classes and outsourcing projects have become commercial ventures for making money. The lack of skills and knowledge among few teachers has to be improvised through orientation programmes and refresher courses for them to remain updated. Students nowadays have become marks-oriented rather than learning new skills. Many graduates and postgraduates are hardworking but they lack practical skills, creativity and innovation. There is a great need for revolution in higher education (Sahoo et al., 2017). These are just some challenges that should cover all the aspects in the present scenario of education and we have to implement hard on them.

The Indian scenario of higher education compared to the rest of the world still kept us back to be competitive enough to resolve the emerging issues of international education and virtual education that require considerably greater attention. Despite their strong growth, institutional mobility and enrolment in these programmes is not being monitored. Australia and the UK are the only countries currently collecting data on international students enrolled in their institutions operating abroad. Otherwise there is no comparable data on the cross-border electronic delivery of educational programmes and overseas campuses, let alone on the educational outcomes of these programmes. And while virtual education seems to hold much promise, there is little conclusive data on the outcomes of virtual learning. What stages of education and for what subjects is this most helpful? Higher education just might be a ticket to the Promised Land for developing countries (Millot, 2015). But in the absence of better analytical and empirical understanding of this burgeoning sector, there is a risk that higher education will become a new mantra before the price of the ticket or even the destination is known.

Keeping in view the problems faced by higher education, the government has constituted a knowledge commission to suggest measures to alleviate them and make India a knowledge superpower in the global economy. But the government is at crossroads. While there is a need for expansion in the higher education sector, resource constraint for both the centre and the states poses a challenge to ensure quality education even in the existing institutions. The government after pursuing neo-liberal policies for the last 17-odd years is keen to open the higher education sector to the private providers, either through public–private partnership or foreign direct investment in higher education. This policy is building a division — while one section is opposed to commodification of education, the other section thinks that involving the private sector is the only way out. How would the higher education sector evolve in response to these challenges is a crucial issue for us to understand and anticipate. How is the sector contemplating changes to engage with the world? If India

has to become a global economic powerhouse, it has to nurture the higher education sector (Padalkar and Gopinath, 2015). The time now is to modernize our education system so that we can get more technically graduated people and help our country to reach the developed state. Today India's youth always try to go abroad for higher education as they have much better facilities and quality. Can't we get that quality here itself? We have to stop this brain drainage and avoid the running away of students from the country.

A significant adjustment that the universities will have to make in this new context is to develop structures that promote and reward group creativity. So far, the emphasis in universities has been on individual performance, which is a consequence of the disciplinary structure. Little, if any, attention is given to the challenge of teaching people to be 'creative' in a team situation. To avoid wasteful duplication, an ethos based on teamwork and, more importantly, on sharing resources will need to be developed at the centre of an institution's policies. Universities will play major roles not only in national but also, and increasingly, in regional economic development, in the delivery of life-long learning, and in the development of civic culture. In order to be effective in these spheres, the values of technology transfer will have to be brought from the periphery of universities, where they reside at the moment, to their core (Sharma, 2015). Universities who are serious about playing a role in the complex game of technology interchange will enter into a multifaceted array of partnerships, the dynamics of which will involve a combination of competition and collaboration.

Realizing the tremendous need for well-skilled professionals in the country for R&D in the biotechnology sector, the focus of the department is on producing quality human resources for graduates, postgraduates, doctoral and post-doctoral research. This includes teaching programmes, scholarships, fellowships, industrial training programmes, awards, re-entry grant, etc. In addition, critical mass of desired expertise for biotechnology research is also being created by providing financial support to the investigators for R&D in various disciplines of biotechnology, such as medical, agriculture, herbal medicine, food and nutrition, environment, marine, veterinary, nanobiotechnology, etc. (Sharma, 2015). The Government of Karnataka has taken initiatives to increase the quality of human resources by supporting specific educational and research institutions, such as the Institute of Agri-biotechnology (IABT), the Institute of Bioinformatics and Applied Biotechnology (IBAB), the Centre for Human Genetics (CHG), and Biotechnology Finishing Schools.

2.2. Growth in Biotech Industry: Market Magnitude

Growing at a faster pace, in comparison with the previous years, the Indian biotech industry witnessed Year over Year (YoY) growth of 57.14 per cent and the total industry size stood at US$ 11 billion in the financial year 2016 (FY16). Fast-paced growth is likely to continue; the industry is expected to increase in size to US$ 11.6 billion by 2017, driven by a range of factors such as growing demand, intensive R&D activities and strong government initiatives (http://www.wellcome.ac.uk). The market size of Indian biotech industry holds about 2 per cent share of the global biotech industry. The biotechnology industry in India, comprising about 800 companies, is valued at US$ 11 billion and is growing at a Compound Annual Growth Rate (CAGR) of 20 per cent (IBEF, 2017). The government has to invest US$ 5 billion to develop human capital, infrastructure and research initiatives if it is to realize the dream of growing the sector into a US$ 100 billion industry by 2025, as per Union Minister for Science and Technology. The bio-pharmaceutical segment accounted for largest revenue share of 64 per cent in India biotech industry during FY16. In the same period, the bio-services and bio-agri segments accounted for 18 per cent and 14 per cent of the biotech industry, respectively (http://www.epa.gov). India is becoming a leading destination for clinical trials, contract research and manufacturing activities, which is leading to the growth of bio services sector (Figure 1).

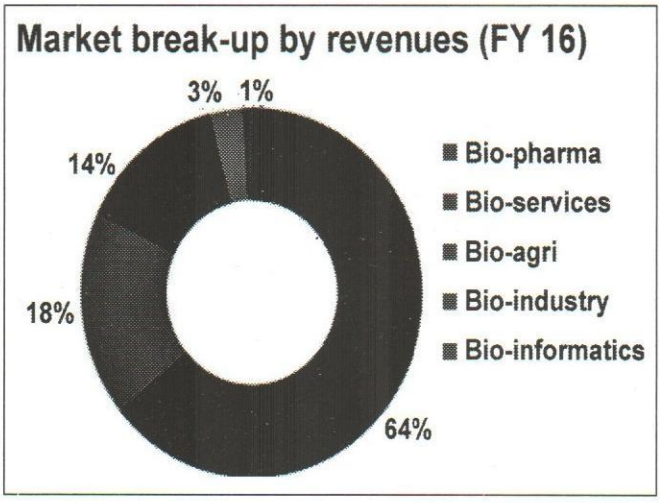

Figure 1: Revenue generation from Biotech sector in 2016

Source: ASSOCHAM, Make in India, TechSci Research.

2.3. *Funding agencies*

A business without a funding source will flounder under the weight of its own debt. Funding is the fuel on which a business runs and the Indian biotech industry has always run out of it (Di et al., 2017). Furthermore, government funding has been a crucial factor in the state of the Indian biotech industry, due to limited access to other sources (for e.g., venture capitalists, due to the high risk of investment). The rapid transition to modern biotechnology in the 1990s and the advances in technology in all aspects of medical and biological sciences left most Indian institutions at a great disadvantage (Gulbrandsen and Smeby, 2005). They did not have the required financial resources to upgrade the laboratories and investigative centres. The science agencies recognized this deficiency, especially its impact on science teaching. Department of Science & Technology (DST) initiated the Fund for Improvement of Science and Technology Infrastructure (FIST) around 15 years ago, initially to support postgraduate departments in universities (Naik, 2015). Subsequently, the programme was expanded for undergraduate and university-affiliated colleges and many medical colleges and departments have benefitted from it. Similarly, DBT (Department of Biotechnology) has the 'Creation of Centre of Excellence and Innovation in Biotechnology' programme and provides multi-user equipment grants. These can be large grants for state-of-art equipment, but will not usually support diagnostic equipment (Durufle et al., 2017). These are also granted on the research and publication track record of a team/ institution, seldom for individual achievers, however outstanding they may be. Hastily put together groups are easily smelt out and large grants of this kind are usually followed by site visits to assess utilization (http:// www.epa.gov).

2.4 *BIRAC*

BIRAC is a new interface that bridges the gap between industry–academia and implements its mandate through a wide range of impact initiatives, such as providing access to risk capital through targeted funding, technology transfer, IP management and handholding schemes that help bring innovation excellence to the biotech firms and make them globally competitive (http://www.birac.nic.in). BIRAC has initiated a not-for-profit public sector company in this direction. It launched the Biotechnology Ignition Grant (BIG) in July 2012. The purpose was to populate the innovation funnel, to encourage new startups and ignite the innovation spirit in students and young entrepreneurs across the country (The Economic Times, 2015). BIG was the first of its kind and a seed grant of Rs 50 lakh was made available to individuals and young student entrepreneurs and startups. The impact of this has truly been 'BIG' (http://blogs.scientificamerican.com). In just about three years more than 150 young entrepreneurs have been supported and it is encouraging to note that out of these 44 are new startups created and seeded through the BIRAC BIG fund.

2.5 *Startups India: Standup India*

The startup is an entity that develops a business model based on either product or service innovation and makes it scalable, replicable and self-reliant. Honourable Prime Minister Narendra Modi launched an ambitious programme called Startup India Standup India on 15 August 2015 (The Times of India, 2015, 2016; The Indian Express, 2015). This was aimed at revolutionizing and accelerating the startup revolution in India, which is already witnessing strong traction. It also aims at encouraging bank financing for startups and offers incentives to boost entrepreneurship and job creation (Start-Up India Campaign, indiantoday.in). Addressing the nation on the 69th Independence Day, he said, 'We are looking at systems for enabling start-upsto make India No. 1 in this field' (inc.com, 2015). A year later, a new campaign 'Standup India' to help startups with bank funding and encourage entrepreneurship among young Indians was launched on 6 January 2016 by the Union Cabinet which aimed at promoting entrepreneurship among young scientists and women. While startups are present across multiple sectors (The Economic Times 2015; Anand et al., 2015), 2015 saw more startups in certain sectors than the others; some of these are analyzed in Table 1.

2.6 *Challenges in Funding*

Challenges in raising funds remain the primary concern, especially during the starting stage, given that there is no credit history or track record of the company. In addition, there are a limited number of credit rating firms for small and medium enterprises (Chesbrough, 2006). Over the past few years, investors have put in billions of dollars into hundreds of startups, many of which have grown into thriving businesses (Agarwal, 2016). However, many analysts believe that raising funds in later stages of a business could become difficult to sustain their operations. Effective cash management is an issue in the short and long term (Bolli and Somogyi, 2011). Cash being the primary channel

Table 1: Start-up Sectors across the Globe

	India	China	Israel	Singapore	Japan	US
Total no. of start-ups (approx.)	10,000	10,000	4,750	N.A.	N.A.	83,000
Tech-based start-ups	4,300	3,400	4,000	N.A.	N.A.	48,500
Non-tech based start-ups	5,700	6,600	750	N.A.	N.A.	34,500
Set up a new business (days)	30–60	30	13	2	10	4
Corporate tax rate	34 percent	25 percent	26 percent	17 percent*	34 percent	39 percent
No. of Tax payments by businesses (p.a.)	33	9	TBD	TBD	TBD	11
R&D spending percentage of GDP (Est. 2014)	0.85 percent	1.90 percent	4.20 percent	n/a	3.4	2.80 percent

* 100 per cent tax exemption for start-ups.

Source: World Bank, News articles, Gov. sites. (Startups India – An Overview).

of payment, electronic payments are still not popular owing to absence of complete penetration to tier 2 and tier 3 cities. Flawed business models and revenue strategies lead to failure of many startups (The Times of India, 2015). Government and private sector investors provide funds through investment channels but such funding is not available for all forms of businesses (Bozeman and Gaughan, 2007). For such startups the biggest problem is to gain investor trust and appropriate funding.

2.7 Career opportunities

With the country offering numerous comparative advantages in terms of R&D facilities, knowledge, skills, and cost effectiveness, the biotechnology industry in India has immense potential to emerge as a global key player (Rani, 2017). India constitutes around 8 per cent of the total global generics market, by volume, indicating a huge untapped opportunity in the sector (Srivastava, 2017). Outsourcing to India is projected to spike up after the discovery and manufacture of formulations. Startups of recombinant vaccines, monoclonal antibodies in medical and health sector need higher knowledge and investments. Another interesting field of study is biomarkers and companion diagnostics, which will enable the optimization of the benefits of biotech drugs (Balasubrahmanya, 2017). Agricultural sector has hybrid seeds, including genetically modified ones, and represents new business opportunities in India based on yield improvement. India currently has a marginal share in the global market for industrial enzymes (Li and Zhu, 2010). Hence, there is an opportunity in focused R&D and knowledge-based innovation in the field of industrial enzymes, which can innovatively replace polluting chemical processes into eco-friendly ones that also deliver environmental sustainability. The funding opportunities are available and there is no reason that any potential researcher should shy away from research due to lack of funding.

3. Conclusions

Multiple career options are in the offing for biotechnology professionals. They can be employed in chemical, pharmaceutical companies, agriculture and allied industries. Research laboratories whether run by government or corporate sector are the preferred place for many biotechnologists, where they work as research scientists or assistants. The perspective for Indian biotechnology would be global while also concentrating on local issues. The achievements in biotechnology could become possible in India only because the government took early initiatives for setting up institutional infrastructure, BIRAC-BIG, Startup and Make in India for human resource development. These initiatives coupled with other industrial promotion efforts may encourage the industry to also participate in this technology evolution exercise. Nevertheless, phenomenal growth and rapid penetration of this technology has been observed. However, the local firms are facing intense competition from a whole range of transnational corporations. The need for an integrated biotech policy, with concurrent attention to higher education system, needs few reforms in order to succeed in the Make in India initiative. Social mobilization and regulation is also considered to be an essential pre-

requisite for orderly progress of the biotech sector. The policy has clearly chalked out a direction to strengthen India's academic and industrial biotech research capabilities; work with business, government and academia to move biotechnology from research to commercialization; foster India's industrial development; inform people about the science, applications, benefits and issues of biotechnology; enhance the teaching and workforce training capabilities; and establish India as a preeminent international location for biotechnology. It is imperative that India leverages resources through partnership and builds regional innovation systems. The strategy will help develop local talent for a globally competitive workforce. While it recognizes private sector as a crucial player, the strategy also visualizes government to play a major catalyzing role in promoting biotechnology. It can be concluded that by simplifying the process of starting a new business we can make India a more developed and powerful economy.

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"The goal of higher education should be to champion the airing of all honest viewpoints. Nothing less is acceptable."

– Bill O'Reilly

The Effects of R&D Spending on Productivity Performance: Findings from the Public Sector Enterprises in India

CHINMOY ROY

In today's internationally interdependent economy, under the fast-tracking speed of technological change, measuring the research and development (R&D) productivity performance has been rekindled with the recent rise of spending by the Central Public Sector Enterprises in India, including Maharatna and Navaratna enterprises (with the Maharatna and the Navaratna status companies receive greater functional freedom based on few parameters set by the Department of Public Enterprises) on R&D in their conduct of democracy-imbued and innovation-led sustainable and smart growth. With the help of eight decision variables in a multi-objective best-practice framework, this study measured the ultimate effectiveness ratings of the thirty enterprises for the past three years. The findings markedly show that though the enterprises are becoming highly technology-intensive, their efficiency gain and exposure in productivity strength are not encouraging, except the Maharatna and the Navaratna enterprises, and many of them are geared on the same trajectory to enhance corporate strength by aggressive R&D spending.

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1. Introduction

The rise of expenditure by the Central Public Sector Enterprises (CPSEs) on R&D in recent years reveals a higher level of administrative support than the customary periodic allocation of R&D spending. While the guidelines issued by the Department of Public Enterprises (DPEs) stipulate R&D expenditure of at least 1 per cent of net profit for Maharatna and Navaratna CPSEs and 0.5 per cent for Miniratnas and others, the actual spending by some enterprises has been much higher in the current year. However, the cumulative spending assumes added significance when compared with India's share in global R&D, where the country ranks 76th in the Global Innovation Index (Choubey, 2015). One rationale for the higher spending by the public enterprises may be that the private sector cannot be expected to periodically invest sufficient resources in R&D with the plea that freely competitive markets will generate a sub-optimal low level of R&D activity (Griliches, 1992). Some researchers argued that government-supported public sector in fields like aviation, power, computing, and satellites, has been instrumental in creating innovative technologies that would not exist otherwise (Ruttan, 2006), (Atkinson & Ezell, 2012). A series of market failures in the recent past had led to a sub-optimal level of R&D, and that may be the reason for devoting more funds to R&D to raise it to an apt level. While this might be true, managers need to be more attentive in determining the periodic spending because they can be challenged by the complications of deciding what types of R&D initiatives to support and how to avoid simply displacing funds that would otherwise have been invested in regenerating resources (Feller, 2011).

As an explicit growth strategy, many countries nowadays are pursuing aggressive R&D spending (Link & Vonortas, 2013); (Goel & Ram, 2008); at least 3 per cent of the Gross Domestic Product (Eurostat, 2014). If the aim is to enhance national competitiveness, then with the multiple policy objectives, sufficient financial resources must be available to cover the cost of, among other things, employees, facilities, equipment, and raw materials. Considering these resources are available, then the issue is how these are used so that the results of the R&D spending can make a significant difference in real-world conditions. Studies show that firm-specific R&D spending has some positive impact on the firm value (Pauwels & Hanssens, 2004). If the objective is to correct market failures, then the primary interest would be an increase in R&D spending that in turn will sprout innovation, differentiated product or services with higher performance and lower costs. Many studies showed a positive correlation between R&D and the variability of potential earnings within industries (Amir & Livne, 2007). Even so, when the goal is to enhance national competitiveness, then the assessment of effects normally includes factors like economic growth, number of unemployed, number of skilled workforce included, etc. Extending the same line of study to focus on the challenges of heightened competition (Mishra & Kolluru, 2011), it was found that similar R&D expenses have significant effects on the CPSEs' innovation inputs, outputs, productivity and profitability. When aggressive expenditure is intended to have new domestic environmental-friendly cases, then it is essential to include incremental improvements in environmental conditions and in safekeeping, etc., as policy goals. As the R&D spending involves expenditure now for a return later, and even some more spending, it gets lost in the aggregate expenditures, resulting in the expenditure appearing in firm accounts as a residual between the market value of the firm and the reported book value (Corrado & Sichel, 2005), so there is a requirement for a framework for identifying and measuring quantitative attributes. In deciding so, a firm would always want R&D initiatives to the required point at which the marginal profit of investment is equal to its marginal cost (Evans & Hammock, 2009).

There exists a normative view that when the outflow of resources are involved, managers ought to be held accountable for usage of those resources and the results that are obtained (Link. & Scott, 2011), which would provide a means of reassuring responsibility. But there is no specific measurement tool for R&D results; vitality index with the help of percentage of growth, revenues, sales or anything relevant to the firm or whatever it was that companies did that was new and different and that caused an increase in performance may support to categorize desired investments. There is a concern about the subjective nature of scoring systems or assigning weights to the relevant attributes, particularly with a large set of series expenditures (Linton & Yeomans, 2007). As accounting data consist of both nominal accounts and the balance sheet section, a Data Envelopment Analysis (DEA) approach is often suggested as an alternative (Schilling, 2010), and annual firm-level accounting measures can best be used (Myburg & Cloete, 2011) in measuring the impact of R&D expenditures. The spending on R&D may affect business in both direct and indirect ways, and consequently such spending is vulnerable, especially discretionary R&D spending (Lodish & Mela, 2007); (Casault & Linton, 2013). Although the effects of R&D spending on revenue, growth and profitability have been researched in depth, there have been little efforts to study the indirect impact of R&D on net worth and value addition of public enterprises in India. The primary motivation is to evaluate the indirect impact of R&D expenditure on intermediate measures so as to examine whether a policy-making unit of the CPSEs can reduce its input consumption, including R&D expenditure, compared to the best-practice, and given the revenue and earnings it generated, the objective is to examine whether the enterprise increased its net worth and net value addition in a best-practice model.

2. Literature Review

Previous research on R&D spending by the public enterprises exists, but the accessible evidence is diverse and contradictory. The spending on R&D is different from the other regular expenditure because the expected return may not simply be the sum of the expected return of all the series of R&D spending in it (Colvin & Marvelias, 2011). The return to this kind of spending may work differently from a portfolio of financial assets, such as stocks and bonds (Solak & Barnes, 2010); (Wouters & Gal, 2011), and such spending depends not only on its own results but also on those of other (Srinivasan & Hanssens, 2009) related spending, hence policymakers need to consider both risk and return to select the most efficient one (Linquiti, 2012). Focusing on the microeconomic questions of costs, benefits and returns on investment, voluminous studies are available that address the issues of development of a counterfactual, the attribution of causality, the diffusion of technology, and the monetization

of benefits (Powell, 2006); (Smith & Thompson, 2009). In a discounted cash flow framework using capital budgeting methods (Vonortas& Desai, 2007) analyses costs and benefits of R&D investment to highlight the efficiency and identified sources of national competitive advantage.

The resemblance between regular financial expenditure and R&D expenditure as real assets have attracted considerable scholarly attention, especially with regard to the managerial flexibility associated with such investment and (Myers, 1977) appears to have been the first to refer to such flexibility, another work in this field includes (Ram & Goel, 2009). Similarly, (Erickson & Jacobson, 1992) argued that for more efficient and cost-effective process, discretionary expenditures play a vital role every time when advantageously managed. There is no dearth of literature in the field that examined the relationship between R&D and subsequent operating performance (Anagnostopoulou, 2008); (Artz & Cardinal, 2010), a company's performance can be measured using income and operating cash flow (Pandit & Zach, 2011). The work of (Lau, 1998) highlighted a strong positive connection between R&D intensity and revenue improvement and how it affected business performance. The study by (Dave & Seetharman, 2013) documented that financial sustainability is powerfully influenced by gross margins and there is a positive impact of R&D activity on sales revenue.

There exists a modest, but growing body of literature related to public sector technology and R&D initiatives in the areas of stock market reaction (Horsky & Patrick, 1987), commodities development (Cooper & Kleinschmidt, 2001), transport and competitiveness (Carayannis & Grigoroudis, 2014); performance measurement in technology-intensive industries (Choi & Williams, 2013); (Roy, 2015). A technology-intensive article addresses the direct and indirect effects of R&D expenditure on the net worth and value addition of the firm. These include studies on R&D spending and its effects on factor intensity and efficiency in Indian manufacturing units (Ferrantino, 1992), to new product announcements (Chaney & Winer, 1991), development of innovative technologies and creative culture in public sector units in India (Kanungo & Srinivas, 2001), to advertising and R&D expenditure on the market value of the firm (Chauvin & Hirschey, 1993). On the basis of the outcomes of these studies, it can be expected that R&D expenditure may have an intermediate impact on firm efficiency through an increase in revenue and earnings, as well as an indirect effect by strengthening net worth and adding net value of the firm.

3. Objectives and Significance

To play a leading role in the government's planned economic revival drive may be the aggressive R&D spending, which is making the CPSEs highly technology intensive with a scaled-up capital expenditure investment target of 34 per cent in 2015–16. The general purpose is to explore the inevitable question of whether or not R&D spending strategies of the public enterprises have been successful in achieving the desired changes during the period under study. The specific objectives are: (1) to identify how well the public enterprises under Maharatna and Navaratna category, between the cognate group of minerals & metal and power generation, and between high and low scale enterprises, spending and managing relative to other enterprises within and between the classes, and where and how much the enterprise can improve more strategically to achieve the ultimate goal of sustained productivity growth; (2) to study whether a policy-making unit of the public enterprises can reduce its input consumption including R&D expenditure as compared to the best practice; and (3) to examine whether the individual policy-making enterprise increased wealth and added value, given the worth of revenue and earnings it generated, in an ultimate effectiveness rating with the intermediate measures.

4. Hypotheses

The R&D initiative tries to differentiate a firm's efficiency from those of its competitors. When the enterprise declares a goal to grow up to a target revenue and return for a certain percentage of R&D spending, the unit in effect proclaims an implicit R&D efficiency relative to others that must be achieved to attain those goals. In the primary phase, R&D spending is likely to work as an R&D-related value-added activity with other inputs to yield the most important objectives of increasing revenue and earnings, and the performance improvement of this phase affects the efficiency status of the secondary phase to produce the eventual goal of increasing the net worth, including intangibles and value addition. To prove the research question as delineated above with the rationale of the study, the following hypotheses are inferred for consideration in this research:

H_{01}: The productivity gain scores are not proportionate with the R&D spending of the enterprises, compared to the best-practice enterprise.

H_{02}: There is no significant difference in ultimate productivity performance between the enterprises over the years.

5. Data and Methodology

The present study considers that the performance differences of the Policy Implementing Units (PIUs) are due to diverse resource mixes and managerial effectiveness, and owing to the tricky nature of R&D spending, the indirect impact of R&D expenditure on firm performance can best be reflected through frontier analysis. Using eight decision variables of 30 public enterprises, including three Maharatna and seven Navaratna enterprises who incurred R&D expenditure consecutively during the last three years, have been considered for the study. The data are secondary and collected from the Public Enterprises Survey 2014–15. To measure the indirect impact of R&D on enterprise performance, with minor variations with the performance indicators suggested by DPEs, the first phase uses three inputs, namely prime costs including direct expenses, employee costs, and R&D spending, to produce two outputs, viz., revenue and earnings, and then these outputs are used as inputs in the second phase to produce eventual outputs namely net worth, and additions in values and intangibles. Based upon the two-stage processes (Kao & Hwang, 2008) of VRS envelopment model (because the selected and identified units consist of a variety of enterprises representing different industries) as used by (Chen & Zhu, 2004) in measuring indirect impact of information technology on firm performance, the model is formulated in the same way to track the efficiency of the public sector enterprises on their R&D efforts:

$$\text{Min } w_1\alpha - w_2\beta$$

$$\alpha\beta\lambda_j\mu_j\tilde{v}$$

Subject to

(Phase-I)

$$\sum_{j=1}^{n} \lambda_j x_{ij} \le \alpha x_{ij_o} \qquad i = 1, \ldots \ldots \ldots, m$$

$$\sum_{j=1}^{n} \lambda_j v_{dj} \ge \tilde{v}_{dj_o} \qquad d = 1, \ldots \ldots \ldots, D$$

$$\sum_{j=1}^{n} \lambda_j = 1$$

$$\lambda_j \ge 0, \quad j = 1, \ldots, \ldots n$$

$$\alpha \le 1$$

(Phase-2)

$$\sum_{j=1}^{n} \mu_j v_{dj} \le \tilde{v}_{dj_o} \qquad d = 1, \ldots \ldots \ldots, D$$

$$\sum_{j=1}^{n} \mu_j y_{rj} \ge \beta y_{rj_o} \qquad r = 1, \ldots \ldots \ldots, s$$

$$\sum_{j=1}^{n} \mu_j = 1$$

$$\mu_j \ge 0, \quad j = 1, \ldots, \ldots n$$

$$\beta \ge 1$$

Where w_1 and w_2 are weights equal to 1 reflecting the performance over the two stages' performance and symbol '~' represents unknown decision variables.

If $\alpha^* = \beta^* = 1$, the two-phase achieves efficient performance as it is viewed as a whole. If $\alpha^* = 1$ and $\beta^* > 1$ (or $\alpha^* < 1$ and $\beta^* = 1$) then it indicates that one of the phases can achieve 100 per cent efficiency with the identified set of intermediate measures. A PIU must be a frontier point in both phases with respect to $\alpha^* x_{ij_o}$ (i = 1, …, … , m), $\tilde{v}^*_{dj_o}$ (d = 1,…,…, D) and $\beta^* y_{rj_o}$(r = 1, …, …, s), where (*) optimal value.

6. Limitations of the Study

Due to time and attribution factors, it is very difficult to measure the direct effectiveness of any R&D endeavours. The study suffers from some inherent limitations of comparability and validity, as the data source do not contain cumulative revenue and earnings derived from new product and process development in line for the specific R&D spending. This study is limited to describe the extent to which each PIU can produce in final phase, given its present level of inputs, or how much each PIU could reduce its initial phase input usage while still producing the same final phase output for identified 30 CPSEs operating in India only. The method chosen for evaluating indirect impact of R&D endeavours with the productivity score might have some inherent limitations too.

7. Analysis and Findings

To evaluate the impact of R&D spending in terms of multiple performance measures within the framework of most effectiveness ratings in two phases, namely efficiency gain and exposure in productivity strength, the DEA-Two Stage (VRS) assessment is carried out and Table 1 depicts the results of the public enterprises under study.

The results of the first phase of the PIUs in terms of efficiency gain score indicate that the vast majority of the enterprises were efficient in using their productive resources. Targeting the ability to generate revenue and earnings in terms of its prime charges, labour, and R&D expenditure, it seems that out of the 30 enterprises 16 maintained their efficiency to the optimum level during the last three years successively, without leaving any scope for improvement in cost efficiency. Only three enterprises, namely BRML Ltd, Bharat Heavy Electricals Ltd and Neyveli Lignite Corporation Ltd, have continued being bottom-ranked performing enterprises during the entire study period, in terms of profitability in increasing earnings and of marketability in boosting revenue or in reducing the costs and volume of inputs. It is discernible that in the Maharatna category, except NTPC Ltd, other two enterprises, namely, Gail India Ltd and Indian Oil Corporation Ltd, have plummeted in monitoring the effectiveness ranking during the initial period. Though the efficiency score from the individual phase cannot be directly compared, but it is noticeable that out of the seven Navaratnas four enterprises, namely, Bharat Petroleum Corporation Ltd, Engineers India Ltd, NMDC Ltd and Container Corporation India Ltd, played a leading role throughout the study period in setting a benchmark, with respect to efficiency gain with the levels of employees, prime costs and R&D expenditure. More importantly, it emerges that the other three enterprises, namely, Hindustan Petroleum Ltd, Oil India Ltd, and National Aluminium Company Ltd, achieved higher ranking score compared to other enterprises.

The results of the second phase in terms of the exposure in productivity strength indicate that the majority of the enterprises were not efficient in using their intermediate resources. Directing the capability to create intangibles and net worth and to add value, it signals that out of 30 enterprises, only 10 at one point of time or the other interruptedly maintained their efficiency at optimum level, leaving the scope for improvement in productive efficiency. With a set of revenue and earnings as optimal intermediate measures, in Maharatna category, two enterprises, namely NTPC Ltd, and Indian Oil Corporation Ltd, and in Navaratna category, except NMDC Ltd, Hindustan Petroleum Ltd, Oil India ltd and Bharat Petroleum Corporation Ltd, other enterprises continued as below-ranked performing enterprises during the entire study period. The overall efficiency explanation in this study is different from that assumed in conventional two separate stages of weighted measures, as the overall efficiency value from the two phases cannot be directly compared, and hence the outcomes of the combined phases are presented in remarks column of Table 1. If the first-phase efficiency is equal to second-phase efficiency is equal to one, then only a PIU is considered as an efficient enterprise. This indicates that single-phase performance alone is not sufficient to characterize an enterprise's performance in utilizing and regenerating the resources.

Table 1: Comparative Efficiency Indicator of R&D Expenditure

Sl. No.	PIUs	Group	Stage 1			Stage 2			Remarks
			2015	2014	2013	2015	2014	2013	
1	BEML Ltd	*CC*	>1	>1	>1	<1	<1	<1	S, S, S,
2	Bharat Dynamics Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
3	Bharat Heavy Elect. Ltd	*CC*	<1	<1	<1	>1	E	E	S, S, S,
4	Bharat Petroleum Corp Ltd	*NR*	E	E	E	E	>1	>1	E, S, S,
5	Bharat Sanchar Nigam Ltd	*CC*	<1	E	E	E	E	E	S, E, E,
6	Electronics Corporation Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
7	Engineers India Ltd	*NR*	E	E	E	>1	>1	>1	S, S, S,
8	Gail (India) Ltd	*MR*	E	E	<1	>1	>1	>1	S, S, S,
9	Hindustan Petroleum Corp Ltd	*NR*	<1	E	E	E	<1	E	S, S, E,
10	MOIL Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,

11	Indian Oil Corporation Ltd	*MR*	E	<1	<1	E	E	>1	E, S, S,
12	Neyveli Lignite Corp Ltd	*CC*	<1	<1	<1	E	>1	>1	S, S, S,
13	NMDC Ltd	*NR*	E	<1	E	E	E	E	E, S, E,
14	NTPC Ltd	*MR*	E	E	E	E	E	E	E, E, E,
15	Oil India Ltd	*NR*	<1	<1	E	>1	>1	E	S, S, E,
16	Container Corp of Ind. Ltd	*NR*	E	E	E	>1	>1	>1	S, S, S,
17	Airport Authority of India Ltd	*CC*	E	<1	E	>1	>1	>1	S, S, S,
18	Balmer Lawrie & Co Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
19	Garden Reach Ship Bl. Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
20	Goa Shipyard Ltd	*CC*	E	E	E	>1	E	>1	S, E, S,
21	HLL Life Care Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
22	Indian Rare Earths Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
23	Kamara jar Port Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
24	MECON Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
25	Mishra Dhatu Nigam Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
26	National Alumin. Co Ltd	*NR*	<1	E	<1	>1	>1	>1	S, S, S,
27	NHPC Ltd	*CC*	<1	E	<1	E	E	E	S, E, S,
28	Rajasthan Electro &Ins Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,
29	SJVN Ltd	*CC*	E	<1	E	>1	E	E	S, S, E,
30	THDC Ltd	*CC*	E	E	E	>1	>1	>1	S, S, S,

Note: MR = Maharatna, NR = Navaratna, CC = Common Category, S = Scope for Efficiency gain, E = Efficient.

A relatively large incongruity between first-phase and second-phase efficiency scores is visible, and the comments column clearly indicates that only one-third of the total enterprises under study could produce identical efficiency score at least one point in time during the study period. By the nature of the evaluation it appears that none of the enterprises achieved benchmark score in both the phases, except NTPC Ltd in Maharatna category. Out of the 10 enterprises, four, namely Bharat Petroleum Corporation Ltd, Hindustan Petroleum Corporation Ltd, NMDC Ltd, Oil India Ltd, all under Navaratna category, and two enterprises, namely Indian Oil Corporation Ltd, and NTPC Ltd, under Maharatna category, and remaining four enterprises, namely Bharat Shanchar Nigam Ltd, Goa Shipyard Ltd, NHPC Ltd, and SJVN Ltd, under common category, are on the best-practice frontiers with the relative importance of both the phases at least at one point of time during the study period. Given the revenue and earnings the enterprises generated, it is found that vast majority of the enterprises failed to increase their productive strength in terms of the value added, net worth and the intangibles of the enterprises. A lack of increase in efficiency to the benchmark score in both the phases conclusively suggests that the indirect impact of R&D initiatives on public enterprise performance remained insignificant and not encouraging.

One of the interests of the study was to find out if there have been any changes in the efficiency performance of the enterprises between the two segments and overall on the R&D initiatives in the three consecutive years. The output data from two-stage DEA processes are arranged in panel design taking three classes of variables, namely Phase 1, Phase 2 and overall R&D measures. The categorical variable is the overall R&D outcome that is represented either (2) where there is scope for improvement

as denoted by 'S' or (1) where there is no scope for further improvement and hence efficient as denoted by 'E' as derived, which is depicted in Table 1. The ordinal variable P_1 is the outcome of the efficiency gain score of Phase 1, and P_2 is the outcome of the exposure in productive strength score of Phase 2. As the interest is to compare the scores of three consecutive years of the same enterprise, the Friedman two-way analysis of variance test is applied both for the evaluated score of Phase 1 and Phase 2.

The output produced by the Friedman test comparing magnitude of efficiency score across three years (panel study) shows that there is no significant difference in the

Table 2: Hypotheses Test Summary (Panel Study)

Sl. No.	Hypotheses	Tests	Sig.	Decisions
1	Phase1: The distribution of P_{11}, P_{21}, and P_{31} are the same	Friedman's Two-Way Analysis of Variance by Ranks	0.537	Retain the hypothesis comparing efficiency gain scores across three years
2	Phase2: The distribution of P_{12}, P_{22}, and P_{32} are the same	Friedman's Two-Way Analysis of Variance by Ranks	0.622	Retain the hypothesis comparing exposure in productivity strength across three years
3	Overall: The distribution of ultimate productivity R_1, R_2, , and R_3 are the same	Cochran's Q Test	0.641	Retain the hypothesis as there is no significant difference in ultimate productivity performance over the three years

mean ranks of efficiency gain in Phase 1 with the significant result of 0.537. Similarly, the distributions of exposure score in productivity strength across the three years in Phase 2 are same with the significant result of 0.622. To compare the distribution of overall productivity performance over the three-year period in the panel study, Cochran Q Test is applied. The result shows that the probability level is above 0.05, this indicates there is no significant difference in overall productivity performance over the three years.

8. Conclusion

The study investigated the pertinent question of why the CPSEs operating in India in recent years resorted to aggressive R&D spending in spite of the guideline to spend a ceiling percentage of sales revenue on R&D initiatives. The results show that there is a very limited indirect effect of R&D initiatives beyond its expected effects through revenue and earnings' growth. Compared to the best practice, most of the enterprises failed to increase their productive performance in terms of the value added, net worth and the intangibles of the enterprises, given the intermediate measures. A lack of an increase in efficiency to the benchmark score in both the phases conclusively suggests that the indirect impact of R&D initiatives on public enterprise performance remained insignificant, and there is no significant difference in overall productivity performance over the three years compared to the increase in R&D spending. This implies that managers of the public enterprises need to be cognizant of the overall impact of R&D spending, not only the instantaneous sales revenue and profit impact. The study posits that the indirect impact of R&D spending on creating intangibles and adding to the financial strength of the enterprises is not encouraging, except for few Maharatna and Navaratna enterprises, which may be due to significant deviations from optimal R&D spending or catastrophe in crafting intangibles.

9. Scope for further Research

The findings of the study open up several areas for further research: the measure of partial productivity to track the efficiency of R&D efforts, and the presence of long-term effect of R&D spending on the productive strength of the firm and how the firm should seek to improve the efficiency and effectiveness of its cumulative R&D spending with discounted cash flow technique. Another area of interest is what the R&D efficiency indices need to be, considering the company's revenue and earnings' growth goals and the ceiling of the R&D the company is willing to spend. Finally, as the productive strength of the enterprise is influenced by both the level of earnings and the variability on sales revenue, further research could be made to examine the effect of sales promotion variables on productive strength, with the addition of private enterprises for comparison.

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"Graduation is not the terminus of your experience; it is the terminal of your success."

– Christian J. Dolores

Feature

Public Debt and its Sustainability at State Level: A Study of Kerala

V. NAGARAJAN NAIDU

The growing fiscal obligation of the Kerala state government is increasingly met from debt liabilities. However, the increased borrowing by the state governments over a period of time creates a burden of repayments comprising interest and principal amount on present as well as future generations. The growing level of debt at an unsustainable level eats away the resources required for other urgent developmental needs of the society. Maintenance of a sustainable and stable level of public debt is a challenge for any state government and it is all the more important in the State of Kerala where the scope of internal mobilization of resources via growth propulsion in primary and secondary activities is limited, at least in the immediate future. The stability and sustainability of debt is influenced to a great extent by the growth of Gross State Domestic Product (GSDP), fiscal deficit, revenue receipt, state's own revenue receipt, primary expenditure, and primary deficit. Thus the action taken on revenue and expenditure of the State and also the strict adherence to fiscal discipline can ensure the stability and sustainability of public debt.

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1. Introduction

Maintenance of financial stability is an important target variable for fiscal performance of any government. In the context of increasing state intervention in developmental and social welfare activities, it is natural that the state would end up burgeoning deficit in all forms. Besides the drive for additional revenue mobilization and improving efficiency in public expenditure, resorting to borrowings has been a major source for meeting the deficit in fiscal resources of the government. Both central and state governments rely on this source in a big way. The provision for this is enshrined under Article 293(3) of the Constitution. As seigniorage is limited to central government, states have to depend only on borrowings for meeting the fiscal resource crunch. However, the increased borrowing on the part of the state governments over a period of time creates a burden of repayments comprising interest and principal amount on present as well as future generations. The growing level of debt at an unsustainable level eats away the resources required for other urgent developmental needs of the society. Thus, maintenance of a sustainable and stable level of public debt is a challenge for any state government and it is all the more important in the State of Kerala where the scope of internal mobilization of resources via growth propulsion in primary and secondary activities is limited at least in the immediate future. This paper attempts to study the structural decomposition of public debt in the State of Kerala and identifies factors determining fiscal sustainability.

The paper is structured into four parts. The first part defines the fiscal profile of the State of Kerala. It highlights the growth of deficits and public debt along with their structural components. The second part gives the structural decomposition of the debt profile of Kerala over time, and

debt instruments issued along with corresponding interest obligations. The third part probes into the stability and sustainability of public debt in Kerala. Here the stability of public debt is assessed with respect to fiscal deficit, Gross State Domestic Product (GSDP) and state's own receipts. The various sustainability indices are evaluated in this context such as debt–GSDP stabilization index, sufficiency of non-debt receipts, availability of net borrowed fund, burden of interest payment, investment and returns, interest payment and receipt of state government, quality of primary deficit, buoyancy of debt compared to state's own receipt and primary balance, and maturity profile of debt. The fourth part provides the summary and conclusion of the study.

Part I

2. Fiscal Profile of the State of Kerala

Table 1 reveals the broad indicators of fiscal performance of Kerala since 2009–10. As the Table shows, the revenue receipts of the state went up from Rs 26,109 crore in 2009–10 to Rs 49,177 crore in 2013–14. Within five years, the revenue receipt has grown by 88 per cent. The important components of revenue receipts are tax revenue, non-tax revenue and central transfers. During 2013–14, the shares of tax revenue, non-tax revenue and central transfers out of total revenue receipts are 65 per cent, 11 per cent and 24 per cent respectively. While tax revenue grew by 82 per cent, non-tax revenue has grown by 201 per cent, though its share in revenue receipt is low. The capital receipt, mainly the borrowings and other liabilities has grown from Rs 8,000 crore to Rs 17,050 crore during the same period, showing 113 per cent growth.

As compared to revenue receipt, the growth of total expenditure is faster. The development of an economy is determined greatly by the percentage of plan expenditure out of the total expenditure. However, the trend shows that the share of plan expenditure has been declining as compared to non-plan expenditure. With respect to growth rates also, the same trend continues. During the same

Table 1: Profile of State Finances (Rs in Crore)

Items	Profile of State Finances (Rs in Crore)					Growth trend % (2002-03 to 2013-14)		
	2009–10	2010–11	2011–12	2012–13	2013–14 term	Long term	Medium	Short term
Revenue Receipts	26,109	30,991	38,370	44,137	49,177	14.9	17.2	11.4
Capital Receipts	8,000	7,807	12,285	15,685	17,050	12.3	20.8	8.7
Total Receipts	34,109	38,798	50,295	59,823	66,227	14.2	18.0	10.7
Non–Plan Expenditure	27,283	31,510	41,754	48,380	55,135	15.1	19.2	14.0
Plan Expenditure (including CSS)	6,785	7,281	9,143	10,848	11,109	9.8	13.1	2.4
Total Expenditure	34,068	38,790	50,897	59,228	66,244	14.0	18.1	11.8
Revenue Expenditure	31,132	34,665	46,044	53,489	60,486	13.7	18.1	11.8
Capital Expenditure	2,059	3,364	3,854	4,603	4,294	14.7	20.2	–6.7
Revenue Surplus/Deficit	–5,023	–3,674	–7,674	–9,351	–11,309	9.6	22.5	20.9
Fiscal Deficit	–7,872	–7,730	–12,456	–15,002	–16,944	11.8	21.1	12.9
Primary Deficit	–2,579	–2,041	–6,162	–7,798	–8,679	14.1	35.4	11.3
Public Debt and Liabilities	70,969	78,673	89,418	1,03,561	1,19,009	13.22	11.86	14.78
GSDP	2,31,999	2,63,773	3,07,906	3,49,338	3,95,076	13.1	14.2	13.1

Source: Comptroller and Auditor General of India, Finance Accounts Government of Kerala, 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances , Government of Kerala, 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Govt of Kerala, The Report of Kerala Public Expenditure Review Committee, Third Committee Fourth Report 2013–14.

period, the capital expenditure showed a positive trend, its share out of the total expenditure has been increasing over time. However, the actual volume was not substantial by any standard. It formed only 6.47 per cent of the total expenditure in 2013–14.

The deficit caused by the discrepancy between revenue receipts and total expenditure is mainly met from increased borrowings. The State has witnessed growing revenue, fiscal and primary deficits. The total debt liability of the State has increased from Rs 70,969 crore in 2009–10 to Rs 1,19,009 crore in 2013–14.

2.1. Trends in Fiscal Profile of the State

The wedge between revenue receipts and expenditure, and its concomitant result of deficit have increased in recent years. The growth of fiscal variables for the years 2002–03 to 2013–14 are estimated for long, medium and short terms, as summarized in Table 2. The growth trends of long, medium and short terms represent those for the last ten, five and three years respectively.

As compared to long term, the public expenditure has grown at a very high rate during short and medium terms. Within the public expenditure, the revenue expenditure has witnessed a higher growth rate. However, the capital expenditure was lower than the revenue expenditure. During the short period, the capital expenditure shows a negative decline, which has to be viewed seriously. Within revenue expenditure, the major components include salary, pension and interest payments. Also, as compared to plan expenditure, non-plan expenditure witnessed a very high growth rate. The discrepancy between revenue and expenditure growth lead to increased public debt. Table 1 shows that the disparity of growth between receipts and expenditure is very wide during medium term as compared to long and short terms. It again implies that the growth of expenditure for the last five years as compared to revenue receipt became a major factor for resorting deficit financing.

The rate of growth of all these deficits (revenue, fiscal and primary) is very high during short and medium terms as compared to long term; these deficits have doubled more during the medium term. One of the major sources of funding to tide over these deficits is borrowing. The capital receipt, particularly borrowings and other liabilities, had a growth rate of 21 per cent during the last five years as compared to 12 per cent for the long term.

The deficit position of Kerala in per capita terms is much higher as compared to the average of all states in India. As shown in Table 2, the gross fiscal deficit of Kerala in per capita term is double as compared to all states. The capital receipt for the year 2012–13 was Rs 4,360/– for Kerala as compared to Rs 2,438/– for all states' average. The per capita outstanding liability is again almost double of all states' figure.

Table 2: Per capita Fiscal Indicators (in Rs): Kerala vs all States (2012–13)

Fiscal Indicators	Kerala	All States
Total revenue	14,495	11,092
Total expenditure	15,518	10,929
Capital receipts	4,360	2,438
Revenue deficit	–1,024	182
Total liabilities	32,051	17,977
Gross fiscal deficit	3,846	1,929

Source: RBI, 2014, State Finances: Study of budgets of 2012–13, Mumbai.

Table 3 shows the trends in fiscal indicators and public debt as percentage of GSDP in Kerala. It shows that though revenue, fiscal and primary deficits have fluctuating trends, the situation has worsened in recent years. Also, though total debt to GSDP had a declining trend up to 2011–12, it has increased in recent years.

Table 3: Fiscal Indicators as Percentage GSDP in Kerala

Years	Revenue Deficit	Fiscal Deficit	Interest payments	Primary Deficit	Total Debt
2004–05	–3.08	–3.73	3.03	–0.7	35.11
2005–06	–2.29	–3.06	2.78	–0.28	33.56
2006–07	–1.72	–2.49	2.72	0.24	32.43
2007–08	–2.16	–3.48	2.47	–1.01	31.64
2008–09	–1.83	–3.13	2.3	–0.83	31.2
2009–10	–2.16	–3.39	2.28	–1.11	30.54
2010–11	–1.33	–2.79	2.05	–0.74	28.4
2011–12	–2.43	–3.95	2	–1.95	28.38
2012–13	–2.69	–4.31	2.06	–2.4	29.77
2013–14	–2.85	–4.28	2.07	–2.19	30.03

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

Part II

3. Structure of Debt Profile of Kerala

The growing budgetary deficit led to burgeoning of debt for the state government. The understanding on the structure of debt profile is very critical for effective and economical utilization of resources obtained through debt and other related obligations. The debt liability of the state government is defined as per the definition of Accountant General (AG) of India. As per the AG's report on financial accounts of the state government for various years, total interest-bearing debt obligations of the state government include public debt consisting of internal debt, loans and advances from the central government, and public account liabilities which include mainly the small savings accounts and provident funds. Table 4 shows the structure of debt and liabilities of the Government of Kerala since April 2000.

The trend indicates that as compared to the year 2000, the share of public debt in total debt obligation of the government has been increasing. In April 2000, the share of total public debt was 57.68 per cent, which increased to 70.03 per cent in April 2014. During the same period, the share of public account liabilities declined from 42.32 per cent in April 2000 to 29.87 per cent in 2014. The components of public debt are internal debt, loans and advances from the central government. The internal debt component of public debt has increased drastically in Kerala. It went up from 29.26 per cent in 2000 to 64.54 per cent in 2014 along with decline in the share of central loans and advances. In short, internal debt and public accounts comprise a lion's share of the state's debt liabilities in Kerala.

The structure of internal debt is given in Table 5. The important components of internal debt are market loans, loans from financial institutions such as LIC,

Table 4: Structure of Debt and Liabilities of Govt of Kerala (in Crores in April)

	2000	2005	2010	2014
(A) Public debt				
I. Internal debt of the state govt	5,735.6	21,676.22	43,368.03	76,804
	(25.43 per cent)	(51.76 per cent)	(61.10 per cent)	(64.54 per cent)
2. Loans and Advances from the Central Govt	5,902.79	5,410.83	6,305.28	6,662
	(29.26 per cent)	(12.92 per cent)	(8.88 per cent)	(5.60 per cent)
Total public debt (1+2)	11,638.39	27,087.05	49,673.31	83,466
	(57.68 per cent)	(64.68 per cent)	(69.98 per cent)	(70.13 per cent)
(B) Other Liabilities				
Public Accounts (small savings, provident fund etc)	85,37.66	14,790.83	21,306.05	35,543
	(42.32 per cent)	(35.32 per cent)	(30.02 per cent)	(29.87 per cent)
Total public debt and other liabilities (A+B)	20,176.05	41,877.88	70,979.36	1,19,009

Note: Figures in brackets show the percentage to total.

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

Table 5: Structure of Internal Debt of Govt of Kerala (in Rs Crores in April)

	2000	2005	2010	2014
i. Market loans	3,959.1	9,605.7	25,973.1	60183.38
	(69.03 per cent)	(44.31 per cent)	(59.39 per cent)	(78.36 per cent)
ii. Ways and means advances from the RBI	45.79	235.25	0.00	0.00
	(0.80 per cent)	(1.09 per cent)	0.00	0.00
iii. Bonds	1.1	1,159.32	695.97	232.58
	(0.02 per cent)	(5.35 per cent)	(1.60 per cent)	(0.30 per cent)
iv. Loans from financial institutions	1,158.24	3,627.65	4,959.22	5,339.45
	(20.19 per cent)	(16.74 per cent)	(11.44 per cent)	(6.95 per cent)
v. Special securities issued to National Small Savings Fund	571.37	7,048.3	11,739.74	11281.17
	(9.96 per cent)	(32.52 per cent)	(27.07 per cent)	(14.69 per cent)
Total internal debt (i + ii + iii + iv + v)	5,735.6	21,676.22	43,368.03	76,804

Note: Figures in the bracket show the percentage to total

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

Table 6: Structure of Loans and Advances from Central Government of Govt of Kerala

	2000	2005	2010	2014
i. Non-plan loans	2,312.86	195.93	32.95	24.07
	(39.18 per cent)	(3.62 per cent)	(0.52 per cent)	(0.36 per cent)
ii. Loans for State/Union territory plan schemes	3,260.96	5,023.4	6,214.86	6,636.98
	(55.24 per cent)	(92.84 per cent)	(98.47 per cent)	(99.62 per cent)
iii. Loans for Central plan schemes	15.39	10.01	4.67	0.0007
	(0.26 per cent)	(0.18 per cent)	(0.07 per cent)	(0 per cent)
iv. Loans for centrally sponsored plan schemes	40.12	54.68	51.64	
v. Ways and means advances				
vi. Pre-1984–85 loans	273.46	126.81	1.16	1.16
	(4.63 per cent)	(2.34 per cent)	(0.02 per cent)	(0.02 per cent)
Total internal debt (i + ii + iii + iv + vi)	5,902.79	5,410.83	6,305.28	6,662.21

Note: Figures in the bracket show the percentage to total

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

Table 7: Net Increase in debt and liabilities of Govt of Kerala (Rs in Crore)

	2000-01	2004-05	2009-10	2013-14
(A) Public debt				
1. Internal debt of the state govt.	1,891.73	4,255.29	4,553.8	11,176
	(50.54 per cent)	(96.15 per cent)	(59.07 per cent)	(72.35 per cent)
2. Loans and Advances from the Central Govt	199.09	–217.14	296.66	40
	((5.32 per cent)	(–4.91 per cent)	(3.85 per cent)	(0.26 per cent)
Total public debt (1+2)	2,090.82	4,038.15	4,850.46	11,216
	(55.86 per cent)	(91.24 per cent)	(62.91 per cent)	(72.60 per cent)
(B) Other Liabilities				
Public Accounts (small savings, provident fund, etc.)	1,652.09	387.5	2,859.22	4,232
	(44.14 per cent)	(8.76 per cent)	(37.09 per cent)	(27.40 per cent)
Total public debt and other liabilities (A+B)	3,742.91	4,425.65	7,709.68	15,448

Note: Figures in the bracket show the percentage to total

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

NABARD, etc., special securities issued to National Small Savings Fund, bonds, and ways and means advances from the RBI. Since 2006, there is no stock of ways and means advances held by the state. The state has witnessed a structural transformation in holding internal debt liabilities. The share of market loans out of total internal debt was nearly 69 per cent in 2000, then declined to 44 per cent in 2005, and again started to gain predominance up to 78 per cent in 2014. The share of financial institutions in internal debt has drastically declined from 20.19 per cent in April 2000 to 6.95 per cent in 2014. The share of special securities issued to NSSF has increased from 9.96 per cent in 2000 to nearly 40 per cent in 2007; it started to decline and then reached 14.69 per cent in 2014. Since 2004, the contribution of bonds in internal loans has drastically declined, and in recent years its share has become insignificant.

The composition of loans and advances received from the central government also witnessed a structural change, which is shown in Table 6. The important components of this source are non-plan loans, loans for state plan schemes, loans for central plan schemes and loans for centrally sponsored schemes. Among these, the share of state plan schemes is a major component and in 2014, the share of other components became insignificant.

The contribution made by various debt components in net accretion of debt and liabilities varies in the state over time. The net accretion of debt liability from various sources is given in Table 7. Internal debt and public account sources are the major ones for creating net addition of debt liabilities in Kerala. In recent years, 2/3 of net accretion of debt liabilities of the state was contributed by internal debt and the remaining 1/3 by the public account sources — mainly small loans and public provident funds. With regard to internal debt, in recent years, the state is relying almost completely on market loans. The contribution of public accounts has steadily declined up to 2005 and after that it increased with fluctuation. In the year 2013–14, it contributes to 27 per cent of net accretion of debt liabilities of the state government.

Part III

4. Stability and sustainability of debt in Kerala

In the public debt context, the term 'sustainability' embodies concern about the ability of the government to service debt. A government which does not generate enough current revenue for debt service must either default on its obligations or borrow more in order to service past debt as well as cover its ongoing imbalance. One common base for assessing the carrying capacity of debt of a state is the level of GSDP and hence debt–GSDP is used as an index for the state's capacity to manage debt. In the context of public debt, the terms 'stability' and 'sustainability' are intertwined. When debt–GSDP shows some sign of stabilizing at a particular level, the debt path for that reason is seen as more sustainable, independently of the level at which the debt ratio has been stabilized, because stabilization is in itself an indicator of fiscal control. It implies that the state has reached a sustainable level of debt (capacity to payback debt servicing obligation and principal repayment); the debt level having reached a stable proportion of indicators reflecting the economic capacity of the state (Indira Rajaram, 2005).

4.1. Stable and sustainable level of debt to fiscal deficit and growth of GSDP

Continuous government borrowing to cover fiscal imbalances results in ever-rising public debt, the servicing of which must eventually come out of public revenues in subsequent years. As public debt accumulates, there is legitimate concern over whether the borrowing government will be in a position to service its debt. Ultimately, when financial markets perceive the debt stock of any government as unsustainable, further lending to that government will cease.

The sustainable level of debt to GSDP is influenced by two factors: the rate of growth of domestic income and targeted level of fiscal deficit. The level of public expenditure during a financial year must be limited the growth rate of income plus a targeted fiscal deficit. Thus the stable and sustainable debt to GSDP (FRBM Act and 13th Financial Commission Report) is defined as

$$d = (f (1+n) / n) \quad (1)$$

where,

d = stable debt–GSDP ratio

f = targeted fiscal deficit

n = growth rate of GSDP

As per the Fiscal Responsibility Act of Kerala, 2011, the targeted fiscal deficit to GSDP for the state was 3.5

Table 8: Debt to GSDP, Revenue Receipt (RR) and State's Own Receipt (SOR)

Years	Ratio of debt to GSDP		Ratio of debt to (RR) Revenue Receipt (RR)	Ratio of debt to State's Own Revenue (SOR)
	Actual level	Sustainable level		
2009–10	30.54	25.3	271.82	364.37
2010–11	28.40	26.83	253.86	332.62
2011–12	28.38	26.23	233.16	312.03
2012–13	29.77	23.00	234.63	302.14
2013–14	30.03	23.00	242.00	316.76

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

for the year 2009–10 and 3 for the years since 2010–11. Table 8 shows the estimated value of sustainable level of debt for the state for the years 2009–10 to 2013–14.

Evaluating the fiscal performance of the state with GSDP, a common practice, does provide a correct picture on the income generating and repayment capacity of the state. Thus sustainability of debt is also compared with the revenue receipt and own revenue of the state. In Table 8, in addition to debt–GSDP ratio, the ratio of debt–revenue receipt and the state's own receipt are also shown. It is revealed that the actual level of debt–GSDP is much higher than the sustainable level for all reference periods in Kerala. In recent years, debt to revenue receipt and state's own revenue are also increasing.

Table 9: Debt Sustainability Indices

	2009–10	2010–11	2011–12	2012–13	2013–14
(a) Debt stabilization fund					
Average interest rate	7.5	7.2	7	7	7
GSDP growth rate	14.6	19.2	17.94	13.46	13.09
Domar's Gap	7.1	12	10.94	6.46	6.09
Quantum spread (Debt* rate spread)	5039	9441	9788	6690.04	7247.65
Primary deficit	–2580	–2041	–6521	–7798	–8679
Debt stabilization fund (Quantum spread plus primary deficit)	2459	7400	3267	–1107.96	–1431.35
(b) Incremental non–debt receipts and total expenditure					
Non–debt receipt	1639	4864	7021	6145	5074
Primary deficit	2532	4325	11503	7420	5956
Interest payment	633	397	604	911	1060
Total expenditure	3165	4722	12107	8331	7016
Resource gap	–1526	142	–5084	–2186	–1942

(c) Net Availability of Borrowed Funds					
Net available borrowed funds	2834	2507	4426	8154	7350
Percentage of net availability of borrowed funds to total debt and other liabilities of the year	14	10	13	22	14
(d) Burden of interest payment					
Interest payment to revenue receipt	20.27	18.36	16.4	16.32	16.81

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

Table 10: Debt Sustainability Indices

	2009–10	2010–11	2011–12	2012–13	2013–14
(e) Investment and returns					
Investment at the end of the year (Rs Crore)	3,328.25	3,807.52	4,206.43	4,511.03	5,623.61
Return (Rs crore)	27.29	75.46	66.99	48.15	100.58
Percentage of Return	0.8	2	1.6	1.1	1.8
Average rate of interest on Government borrowing (In per cent)	7.5	7.3	7.2	7.1	7.1
Difference between interest rate and return (per cent)	6.7	5.3	5.6	6	5.3
(f) Average interest received on loans advanced by the State Government					
Outstanding amount of loan advanced	7,749	8,467	9,404	10,456	11,721
Interest received	46	54	23	19	21
Interest received as per cent to outstanding loans and advances	0.59	0.64	0.24	0.18	0.18
Average rate of interest on Government borrowing	7.5	7.3	7.2	7.1	7.1
Difference between borrowing rate of interest and returns received	(–) 6.91	(–) 6.66	(–) 6.96	(–) 6.92	(–) 6.92

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

4.2. Debt sustainability indices

The important debt sustainability indices used here are: (1) Debt–GSDP stabilization index and primary deficit (2) Incremental non-debt receipt and total expenditure (3) Net availability of borrowed funds (4) Burden of interest payment (5) Govt investment of borrowed funds and its rate of return (6) Refinancing of borrowed funds and its rate of interest (7) Quality in the use of borrowed funds (8) Buoyancy of debt to GSDP, own receipt and primary balance (9) Status of consolidated sinking funds and maturity profiles of debt liabilities. Table 9, 10 and 11 summarize these indices.

4.2.1. Debt/GSDP stabilisation index and the primary deficit

Splitting public expenditure into interest in inherited debt and non-interest expenditures, the overall fiscal deficit can be defined as the algebraic sum of the interest due on inherited debt, and primary deficit is defined as the excess of residual non-interest expenditure over total non-debt receipts. The primary deficit can also be clearly negative,

Table 11: Debt sustainability indices

	2009–10	2010–11	2011–12	2012–13	2013–14
(g) a. Components of fiscal deficit in Kerala					
Revenue deficit	63.8	47.53	61.61	62.33	66.74
Capital outlay	26.72	43.51	24.86	30.68	25.34
Others *	10.04	8.96	13.15	6.99	7.91
Fiscal deficit	7873	7730	12455	15002	16943
(g) b. Primary deficit/Surplus – Bifurcation of factors ***(Rupees in crore)***					
Non–debt receipts	26,196	31,060	38,081	44,226	49,300
Primary Revenue Expenditure	25,840	28,975	39,751	46,284	52,221
Capital Expenditure	2,059	3,364	3,853	4,603	4,294
Loans and Advances	877	762	998	1,136	1,464
Primary Expenditure	28,776	33,101	44,602	52,023	57,979
Non–debt receipts vis-à-vis Primary Revenue Expenditure	(+) 356	(+) 2,085	(–) 1,670	(–) 2,058	(–) 2,921
Primary deficit (–)/ surplus (+)	(–) 2,580	(–) 2,041	(–) 6,521	(–) 7,797	(–) 8,679
(h) Buoyancy with respect to GSDP					
Buoyancy of debt	0.83	0.57	0.76	1.18	1.07
Buoyancy of own revenue	0.75	1.12	1.18	1.57	0.69
Buoyancy of primary balance	–3.63	1.09	–12.23	1.45	0.81

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

denoting a primary surplus. It is termed primary because it arises on account of fiscal flows in the current year, not including expenditure on inherited debt from the past (Indira Rajaram, 2005).

The necessary condition for stabilization of debt is that if the rate of growth of the economy exceeds the interest rate or the cost of public borrowings, the debt–GSDP ratio is likely to be stable, provided the primary balances are either zero or positive or moderately negative. Given the rate spread (GSDP growth rate–interest rate) and quantum spread (Debt x rate spread), the debt sustainability condition states that if the quantum spread together with the primary deficit is zero, their debt–GSDP ratio would be constant or their debt would eventually stabilize. On the other hand, if the primary deficit together with the quantum spread turns out to be negative, the debt–GSDP ratio would be rising. In case it is positive, the debt–GSDP ratio would eventually be falling.

As given in Table 9, in recent years, Domar gap or the rate spread is positive but declining, which indicates that the sustainable level of debt of the state is declining. The primary deficit exceeds the quantum spread or allowed level of debt in recent years, indicating the worsening of debt sustainability of the state.

4.2.2 Sufficiency of non-debt receipt

Another indicator for debt stability and its sustainability is

Table 12: Maturity Profile of Debt and Outstanding Amount in Consolidated Sinking Fund

	2009–10	2010–11	2011–12	2012–13	2013–14
Maturity profile of debt					
Up to one year	1,587.67	2,566.98	2,154.64	2,569.25	5,791.05
	(3.2)	(4.7)	(3.5)	(3.6)	(8)
One to three years	4,503.59	5,205.33	8,401.13	2,674.9	6,829.83)
	(9.1)	(9.5)	(13.6)	(3.2)	(8.2)
Three to five years	5,215.70	6,260.17	9,100.09	9,100.72	12,058.34
	(10.5)	(11.4)	(14.7)	(12.6)	(14.4)
Five to seven years	6,786.36	9,314.78	13,156.00	13,181.39	13,165.08
	(13.7)	(17.0)	(21.3)	(18.2)	(15.8)
Seven years and above	27,363.90	28,162.37	24,240.81	36,932.83	44,048.78
	(55.1)	(51.3)	(39.2)	(51.1)	(52.8)
Information not furnished by State Government	4,216.09	3,377.55	4,740.42	4,674.95	4,689.63
	(8.4)	(6.1)	(7.7)	(6.5)	(5.6)
Status of consolidated sinking fund					
Outstanding Consolidated Sinking Fund*	1,092.67	1,473.67	1,601.44	1,387.63	1,497.16
Required contribution to Consolidated Sinking Fund from revenue accoun	354.845	339.59	380.30	465.66	542.385
Actual contribution to Consolidated Sinking Fund from revenue account	276.36	275.00	10.00	0.00	0.00

Note: Figures in the bracket show the percentage to total

Source: Comptroller and Auditor General of India, Finance Accounts, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14; Comptroller and Auditor General of India, State Finances, Government of Kerala 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.

the adequacy of incremental non-debt receipts of the state to cover the incremental interest liabilities and incremental primary expenditure. The debt sustainability could be significantly facilitated if the incremental non-debt receipts could meet the incremental interest burden and the incremental primary expenditure. Persistent negative resource gap indicates the non-sustainability of debt, while positive resource gap strengthens the capacity of the state to sustain the debt. The trends presented in the Table indicate that the incremental non-debt receipts were sufficient to meet the incremental debt service obligations during the period 2010–11, but they were inadequate to finance incremental primary expenditure in 2011–12. This is because of sharp increase in primary revenue expenditure in recent years.

4.2.3 Net Availability of Borrowed Funds

The debt sustainability of the state also depends on (i) the ratio of debt redemption (principal and interest payments) to total debt receipts and (ii) application of available borrowed funds. The ratio of debt redemption to debt receipts indicates the extent to which the debt receipts are used in debt redemption, indicating the net availability of borrowed funds. The solution to the government debt problem lies in application of borrowed funds, i.e., they are (a) not being used for financing revenue expenditure and (b) being used efficiently and productively for capital expenditure, which either provides returns directly or results in increased productivity of the economy in general which may result in increase in government revenue.

Table 9 shows the net availability of the borrowed funds from all sources from 2009–10 to 2013–14. This is the fund available after meeting the yearly debt obligation, such as interest and principal payment. In 2013–14, the net available fund after meeting this entire debt obligation was only 14 per cent. This shows that a larger part of the borrowings was being used for debt redemption (including interest), leaving only a small portion of the borrowed funds to be spent for developmental activities.

4.2.4 *Burden of interest payments*

The burden of interest payment is measured by interest payments to revenue receipts ratio. Except in 2013–14, in general the burden of interest payment has been declining in Kerala. It implies that a larger percentage of revenue receipts can be utilized for other primary revenue expenditures as well as capital expenditures in the state.

4.2.5. *Investment and returns*

As of 31 March 2014, the state government had invested Rs 5,623.61 crore in statutory corporations, government companies, joint stock companies and co-operatives. The average return on these investments was 1.46 per cent in the last five years, while the government paid an average interest rate of 7.24 per cent. The difference between the interest paid by the government for obtaining borrowed funds and return of investment indicates the inefficient utilization of the borrowed funds. This may affect future redemption of principal as well as interest payment in the state.

4.2.6. *Loans and advances by the State Government*

In addition to investments in co-operative societies, corporations and companies, the government has also been providing loans and advances to many institutions/ organizations. Table 11 presents the outstanding loans and advances and interest receipts vis-à-vis interest payments during the last five years. Interest received against these loans remained less than 1 per cent during the entire period as against the cost of borrowing between 6.1 and 9 per cent. The increasing difference between borrowing rate of interest and returns received threatens the debt servicing of the state.

4.2.7. *Quality of deficit*

The quality of deficit is evaluated by (a) the ratio of revenue expenditure to fiscal deficit and (b) the capital expenditure out of the primary deficit. The ratio of revenue deficit to fiscal deficit and the decomposition of primary deficit into primary revenue deficit and capital expenditure (including loans and advances) would indicate the quality of deficit in the state's finances. The ratio of revenue deficit to fiscal deficit indicates the extent to which borrowed funds were used for current consumption. Further, persistently high ratios of revenue deficit to fiscal deficit also indicate that the asset base of the state was continuously shrinking and a part of the borrowings (fiscal liabilities) did not have any asset backup. The decomposition of fiscal deficit gives an idea about the way by the deficit funds are utilized. As given in the Table, during 2013–14 nearly 67 per cent of fiscal deficit is used for meeting the revenue deficit, mainly for committed expenditure such as salaries, pensions and interest payments. At the same time, there has been shrinking of capital outlay from the fiscal deficit. In 2013–14, it was just 25 per cent of the total fiscal deficit.

The bifurcation of the primary deficit indicates the extent to which the deficit has been on account of enhancement in capital expenditure which may be desirable to improve the productive capacity of the state's economy. Bifurcation of the factors leading to primary deficit or surplus of the state reveals that the primary deficit was on account of capital expenditure incurred and loans and advances disbursed by the state government. In other words, non-debt receipts of the state were not enough to meet the primary revenue expenditure requirements during 2009–10 and 2010–11. In recent years, the growth of primary deficit was mainly accounted to revenue expenditure. The share of capital expenditure to primary deficit has shown a declining trend in 2012–13 and 2013–14, indicating less accumulation of productive capacity in the economy, which is not desirable for long-term debt-redemption capacity of the state.

4.2.8. *Buoyancy of debt, SOR and Primary Balance*

Buoyancy of debt, State's Own Revenue (SOR) and primary balance with respect to GSDP are another set of indicators highlighting the sustainable aspects of debt in a state. The buoyancy of debt to GSDP has a fluctuating trend. The positive buoyancy of debt to GSDP in the last two years shows that the percentage change in growth rate of debt is greater than the percentage change in growth rate of GSDP. However, the average buoyancy of debt to GSDP for the last five years, i.e., 0.882, is less than one. The average buoyancy of debt to SOR is greater than one (1.062), which implies that the percentage change in growth rate of debt is greater than the same change in SOR. However, in the case of primary deficit, the average buoyancy rate is negative (–2.502), implying that as

compared to GSDP growth the primary deficit is growing at a higher level. The sustainability of debt needs positive buoyancy of primary balance.

4.3. Maturity profile of debt

The maturity profile of state debt is given in Table 12. This indicates that the government will have to repay 46.4 per cent of its debt between one and seven years. A well-thought-out debt management strategy will ensure that no additional borrowings, which mature in these critical years, are undertaken. To stabilize the debt, there has to be sufficient fund in consolidated sinking fund for redeeming the past debt obligations.

On the basis of the advice given by the Reserve Bank of India, no depreciation fund or sinking fund has been maintained for the loans floated by the government from the year 1975. In accordance with the guidelines issued by the Reserve Bank of India, the government constituted a Consolidated Sinking Fund during the year 2005–06 for redeeming its open market loans. A revised scheme of Fund was constituted during 2007–08 as an Amortisation Fund for redemption of outstanding liabilities in replacement of the existing Scheme of Consolidated Sinking Fund which was operative till the end of the financial year 2006–07. The rate of contribution to the Fund is 0.5 per cent of the outstanding liabilities as at the end of the previous year. The Fund is credited with the contribution from revenue and interest accrued on investment made out of the Fund. However, the amount set apart for the Fund is far less than the required contribution from the revenue account as per the guidelines. In 2013–14, the amount needed for the sinking fund was Rs 542.38 crore. However, there was no transfer of fund from revenue receipt to sinking fund during this year. The resource gap increases as time elapses and this may adversely affect the redemption of past debt and stability of debt.

Part IV

5. Summary and conclusion

The resources for growing public expenditure and the resultant fiscal deficit are mainly met from debt liabilities. In a state like Kerala, where revenue mobilization through primary and secondary development is bleak, there is a need for prudent debt management to maintain the level of debt at a stable and sustainable level. The growth of deficit along with reduction in plan expenditure highlights that a sizeable share of debt resources are utilized for non-plan expenditure. The per capita debt burden of the state is much higher than that of all states and other south Indian states. A major portion of fiscal deficit was meant for covering revenue deficit, and the control and regulation of government behaviour can to a great extent avoid the deterioration of fiscal deficit along with augmentation of economic growth. The growth of fiscal deficit is threateningly very high with respect to revenue receipt and state's own receipt in the state. The growing debt burden has created fiscal implications in the form of interest payments and repayment of debt obligations. However, the share of interest payment to revenue receipt has seen a declining trend in the state in the recent years.

Out of the total debt obligation of the state, the major source is public debt followed by public account liabilities. Within the public debt, the internal debt (particularly the market loans) comprises a major share. In recent years, the share of loans from Government of India has declined very significantly.

The stability and sustainability of debt is influenced to a great extent by the growth of GSDP, fiscal deficit, revenue receipt, state's own revenue receipt, primary expenditure, and primary deficit. The sustainable level of public debt based on the growth rate of GSDP and a targeted level of fiscal deficit shows that the actual debt–GSDP ratio of the state is higher than sustainable debt–GSDP ratio. With respect to state's own resources also, the existing level of debt liabilities is greater than the estimated stable level. Debt sustainability can be assessed by using various indices. These indices do not give a uniform inference on debt sustainability of the state. Debt stays at a sustainable level if the primary deficit is equal to the quantum spread. However, the primary deficit has exceeded the quantum spread or allowed level of debt in recent years, indicating the worsening of debt sustainability of the state. The debt sustainability could be significantly facilitated if the incremental non-debt receipts could meet the incremental interest burden and the incremental primary expenditure. In recent years, the non-debt receipt is inadequate to meet the incremental total expenditure.

Net availability of borrowed funds is another indicator of debt sustainability. The trend indicates that a larger part of the borrowings was being used for debt redemption (including interest), leaving only a small portion of the borrowed funds to be spent for developmental activities. In

the case of interest burden to revenue receipt, except in 2013–14, in general the burden of interest payment has been declining in the context of Kerala. The efficiency in utilization of borrowed funds is another important determinant of debt sustainability. The growing difference between the interest paid by the government and return of investment indicates the inefficient utilization of the borrowed funds. The interest received by the government against the loans disbursed to various public institutions is another sustainability indicator. Interest received against these loans remained less than one per cent against the cost of borrowing between 6.1 and 9 per cent, thereby threatening the debt servicing of the state.

The quality of primary deficit, i.e., the extent of the deficit on account of enhancement of capital expenditure as a debt sustainability index, highlights that the state has enough non-debt deficit to meet primary revenue expenditure. The low share of capital expenditure from primary deficit threatens the productive capacity and future debt redemption ability of the state. The buoyancy rate of debt to GSDP, state's own receipt and primary balance do not auger well for the state. The negative buoyancy of primary balance in the recent years gives warning signals. The efficiency of debt redemption depends on the sufficiency of fund transferred from revenue account to Consolidated Sinking Fund, set apart exclusively for the purpose. However, the actual amount transferred to the Fund is much lower than the required contribution as per the RBI guidelines. Thus to attain a stable and sustainable level of debt in the state, a multi-pronged approach touching revenue, expenditure and debt management is needed. In addition to the stress on improving the internal revenue-generating capacity of the state, the performance of the state on expenditure and utilization of borrowed fund needs critical scrutiny. Also, the efficiency of debt management can be ensured only with strict adherence to discipline in fiscal administration of the state.

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"Study without desire spoils the memory, and it retains nothing that it takes in."

– Leonardo da Vinci

Feature

Application of Lean Principles in Indian Service Sector: Exploratory Analysis

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In the current era of globalization, each organization, either manufacturing or service, is starving to improve the competitive dimensions. As the customers have become more demanding in terms of price, quality and delivery, organizations must use world-class practices in their business functions to get maximum output. The Indian service sector is gaining more and more interest as the connected manufacturing sector is expanding. Many techniques are being used by the service sectors whose origins are in auto-manufacturing industries. This research article attempts to identify the challenges, improvement practices, strategies and improved performance measures considering the application of lean principles in service organizations. For this purpose, service industries working in the Gujarat state have been selected as sample, and an exploratory analysis has been conducted. The results show moderate application of lean principles in the business functions of the service sector. This can be further enriched by developing a set of guidelines and models to help them implement lean principles and associated practices.

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1. Introduction

The service sector is an important element of the world's economy, and is therefore gaining more attraction to be better utilized for the specific functions of the other sectors such as manufacturing. This tertiary sector helps connect the different elements of the supply chain of an organization by providing various services. A lot of research has been carried out to improve the performance of the service sector, to increase the competitive dimensions — speed, quality, cost and delivery at the global level. The academic organizations, health sectors, restaurants, banks, insurance companies, software service organizations, are now on track to improve their competitive dimensions. They are focusing on world's best manufacturing practices like Total Quality Management (TQM), Lean Manufacturing Practices (LMPs), 6-Sigma and so on, as these have proved their worth in manufacturing sectors (Antony, 2004, 2007; Coronado and Antony, 2002; Kumar et al. 2006; Bhatt, 1999, 2008; Antony and Desai, 2009; Vinodh and Chintha, 2011). The competitiveness index of India can be further improved by applying the improvement techniques (Klaus Schwab, 2014). This research is designed to find out the challenges in becoming competitive by identifying the areas of importance, strategies and improvement practices, and the performance measures of the Indian service sector.

2. Competitiveness Improvement Practices of Service Sector-Focus Lean Principles (LPS)

Quality in service organization is a measure of the extent to which the service delivered meets the customer's expectations. Measures of service quality may either be hard or soft. Hard measures are quantifiable – downtime

of computer, percentage of mobile calls answered. Soft measures are those that are not quantifiable, subjective and judgmental, and based on perceptual data – customers' satisfaction, staff's attitude towards customers, etc. According to Gronroos (1990), quality of services has two dimensions – technical and functional. Technical quality is what the customer is left with when the production process and personal interaction are over. The functional quality is the interaction between a customer and a service provider which constitutes how the service is provided. It is influenced on technical quality. Examples of functional quality measures are attitude, behaviour quality, and relationship among staff, appearance and personality of staff, accessibility of staff to customers, overall approachability. Silvestro, et al. (1990) classifies measures of service quality as internal and external. Internal quality measures are generated by staff or management to meet their own internal quality specifications; external measure is the level of customer satisfaction. Quality function deployment, 6-sigma, lean 6-sigma, have proven their importance in various aspects of designing layout, improving delivery performance of service sectors of education, healthcare, couriers, banks, etc. Some of these examples include 6-sigma in banks, Malcom Baldrige Performance Excellence in health care and education, being practised since last decade. The conventional quality management tools such as TQM, lean 6-sigma that are being used by service industries have originated from manufacturing industries.

Lean Principles (LPs) have the inherent characteristics to identify the non-value-added activities (NVAs) from the value chain of the products/services and to gradually eliminate them (Womack et al., 1990; Holweg, 2007). The word 'lean' was originally given by Krafcik in 1988 after observing the operations in Japanese automobile plants that were very fragile and without wastes (Holweg, 2007). Over time it has shown the potential in the western manufacturing organizations too and is also being implemented in the service sectors, by removing wastes and thus increasing value. Implantation of LPs in areas such as health sectors, software services, academic institutions, banks, hotels, etc., has been published as case studies and empirical investigations. It contains various aspects of LPs like their potential in service organizations, requirements to implement LPs, barriers against smooth implementation, identification of critical success factors and their change enablers and recognition of effects of LPs on competitiveness dimensions.

Table 1: Significance of Lean Practice for Manufacturing Performance Improvement

S. No.	Practices to implement LPs	Improved performance measure(s)
1	Value Stream Mapping	Output per shift, Number of operators, Material transportation, Setup method, Inventory
2	Check list	Working condition, Work content
3	Time and motion study	Change over time, Production rate
4	Involvement of top management Training	Setup time, Number of setups, Production time
5	Alliance amid operational and management objectives	Handling time, Cycle time, Queue time, Number of injuries
6	Training by simulation Control strategies	Flow time, Delivery, Work in process
7	Lean adoption model	Gained holistic view of implementation phenomena
8	Regular meeting Design of visual control	Work in process, Cost, Delivery, Service level
9	Lean implementation model	Change over time, Floor space, Inventory, Lead time, Production time
10	Design of improvement area through Kaizen event	Response time
11	Simplification of complex situation	Throughput, inventory, operational expense

1. Schaeffer, 2010; 2. Brannmark and Holden, 2013; 3. Abdulmalek and Rajgopal, 2007; 4. Green, et al. 2010; 5. Detty and Yingling, 2008; 6. Kumar and Abuthakerr, 2012; 7. Jurado-Martinez and Fuentes-Moyano, 2012; 8. Slomp, et al. 2009; 9. Moreira and Pais, 2011; 10. Cottyn, et al. 2011; 11. Goldratt, 2011.

Table 1 shows the level of improvement in different manufacturing performance measures and the supporting initiatives that have been used to implement the LPs and its practices. The content of this table are taken from representative case studies published in scholarly journals.

LPs and their practices have shown great potential for application in different types of manufacturing organizations. From Table 1 it can be seen that single LP or practice can bring a lot of improvement, in different surroundings and setting of industries. Considering the important role of service sectors in transporting value among the various organizations of the secondary sectors, genuine consideration of application of lean principles can increase competitiveness.

3. Research Objectives

By nature, service industries depend more on human workforce. So, improving the quality of service is more important because here the customer comes in frequent contact with the employees of company, who play an important role in protecting the quality of services being offered. Service organizations practise world-class improvement initiatives but not all of them succeed equally in the market. By referring to the competitiveness index of India, the performance of service organizations of the country is comparatively low. Keeping these factors in mind, following objectives are decided for the present research:

1. Identify the challenges for becoming competitive
2. Identify functional areas of importance
3. Recognize strategies and improvement practices to become competitive
4. Observe the performance measures associated with the above
5. Measure the potential of lean principles in service organizations to become competitive

4. Research Method, Research Tool, Sample, and Data Collection

4.1 Research Method

As these objectives are very general, an exploratory analysis of the service organizations was conducted (Jeffrey L. Callen, 2000). The questionnaire research method was found suitable for the study. The questionnaire research method was to be followed with personal interview and feedback form. The literature review revealed that the responses could be studied with the questionnaire research method, and more general results and outcomes could be arrived at as compared to single case study and analysis (David J. Luck and Ronald S. Rubin, 2002).

Service organizations that function worldwide were selected for this purpose. These organizations are located in Bhavnagar, Gujarat, India. The organizations' representative personnels were approached first for getting the responses. Letter was mailed in advance to convey the objectives of the research and ensure confidentiality of data. Then communication was followed by a personal interview with help of a questionnaire and response sheet. The process lasts for 63 days. The experts in the field of lean manufacturing, Japanese manufacturing systems, productivity, and quality and competitiveness enhancement were asked to decide the content and format of the questionnaire. The feedbacks from the respondents were analyzed and classified based on the objectives of the research.

4.2 Research tool and sample information

The questionnaire form used for the purpose contained 3 sections: sections I had open ended, dichotomous, and multiple choice questions. The questions are related to the organizational profile. Section II had open ended, dichotomous, multiple choice, rank type, combination of multiple choice and open ended questions, seeking information related to competitiveness and enhancement initiatives. Section III was for extra suggestions from respondents. The details of the questionnaire form are given in Table 2.

Most of the organizations selected are nationalized or government-run; hence their functions are uniform in nature. Their areas of function are academics, restaurants, banking, transportation, and health care activities. Nineteen organizations were approached for the purpose and 17 gave their feedback. The response rate was 89.4736 per cent, which is quite justifiable for such exploratory research method (Jeffrey L. Callen, 2000). Table 3 gives the information provided by the respondents which are analysed.

4.3 Data collection

Table 4 presents the challenges in becoming competitive. functional areas of importance, strategies adopted to become competitive, differentiation in practices as

Table 2: Details of Questionnaire Tool

Type of Question	Numbers in Section I	Numbers in Section II	Auxiliary Details	Method of Analysis	Results
Open ended	0	0	Sheet is provided	Qualitative	Inference
Multiple choice question	0	4	-	Qualitative and quantitative	Inference and statistics
Rank type	0	1	-	Qualitative and quantitative	Inference and statistics
Dichotomous	0	1	-	Qualitative and quantitative	Inference and statistics
Combination of multiple choice and open ended	0	1	-	Qualitative and quantitative	Inference and statistics
Basic information	5	-	-	Helps in qualitative analysis	Helps in achieving inference and statistics

Table 3: Type, Scope and Year of Inception of Respondents

Type and Scope of Organization	Numbers	Year of Inception
Banking	2	1910, 1994
Education	6	1978, 1983, 1993, 2004, 2007, 2009
Service provider	2	2004, 2013
Restaurant	3	2009
Health care	4	1984, 1985, 1990, 1998

compared to the competitor. The improvement practices and performance measures are listed in Table 5. The potential of lean principles in service organizations and their business functions are listed in Table 6.

5. Results and Outcome

The responses were further divided into two parts, as during analysis it was observed that the experienced and newcomers had significant differences in their responses. So they were classified into two groups as shown in Table 7.

Part 1 has respondents (n1 = 47.05 per cent) with experience of 15 years or less, and part 2 has respondents (n2 = 52.94 per cent) with experience of more than 15 years. Following are some of the results:

- Ranking of business functions (1–6, most critical to least critical) due to competitive environment. The respondents were asked to assign ranks to business functions according to difficulty in managing to compete. In the response they have shown that service operations, sales and marketing, human relations and development are observed as highly sensitive to be competitive. While finance and accounting, and research and development functions are not seen as sensitive. These functions are seen to be highly focused on by Western and Japanese organizations [Schwab, K.] to become more competitive. It was observed that service operation was most critical and human relation and management was least critical for n2 group. The range of criticalness was very low (17.64–5.88= 11.76) for the n1 group, while for n2 group the range of criticalness was observed as (41.17–5.88 = 35.29). This shows that newcomers are more competitive in managing the business.
- Improvement practices and improved performance measures. The outcome regarding this objective is listed in Table 8. It was observed that organizations focus highly on human relation development and

Table 4: Challenges, Functional Areas of Importance, Strategies, and Different Practices

Challenges	**Response in %**
Increased customer awareness	88
Increased customer expectations	88
Fast-changing technology	88
Large number of competitors	88
Increasing cost of manpower	65
Need for improved business infrastructure	59
Increased buying power of customers	53
Newer business models and practices(like ERP, CRM, SCM)	47
Frequently changing government policies	18
Others	12
Affected business function	**Response in %**
Service operation	100
Sales and marketing	94
Human relation management	82
Research and development	71
Finance and accounting	71
Strategies adopted	**Response in %**
Improved and innovative product or service quality	88
Reduced waiting time/Quick service practices	76
Offering wide service variety	65
Provide mistake-proof service/product	65
Discount on cost	41
Quick and short delivery practices	35
Others	12
Business functions that use improvement initiatives	**Response in %**
Service operation	47
Human relation management	47
Sales and marketing	35
Research and development	6
Finance and accounting	6
Practices for differentiation of services	**Response in %**
Faster services	88
Priority to regular customers	59
Priority services with additional charges	24
Quality of services is focused	6

Table 5: Improvement Practices and Performance Measures

Improvement practices	Performance measure
• Expert lectures	• Academic performance of students
• Customer and stakeholder care	• Satisfaction of stakeholders
• Interactive practices	• Customers numbers
• Training, faculty development program	• Operation time
• Conventional gathering	• Standardized operation
• Advertisements, Brochures Marketing	• Quality of operation
• Use of software	• Mode of operation
• Creating opportunity	• Speed and reliability of data
	• Contribution to society through research

Table 6: Potential of LPS in Service Organizations Business Functions

LP / BF	SP	CI	WE	CS	RK	EUSR
HRM	52.94	58.82	17.64	52.94	52.94	76.47
SM	35.29	70.52	11.76	52.94	52.94	29.41
R&D	23.52	29.41	5.88	11.76	35.29	29.41
FA	64.70	35.29	11.76	35.29	52.94	58.82
SO	64.70	64.70	52.94	64.70	52.94	58.82

BF = Business Function, HRM = Human Relations and Management, SM = Sales and Marketing, R&D = Research and Development, FA = Finance and Accounting, SO = Service Operation

service operation are highly focused for improvement. Group n1 focuses on HRM functions while group n2 on service operations. Group n1 practises expert sessions, meetings, taking care of their stakeholders to improve the business function. Group n2 practises techniques of layout improvement, use of internet facilities, monitoring, etc., to improve service operation. It is observed from the Table that both groups have different practices for the same business functions of HRM and service operations. If some of these practices can be adopted in the other group, the advantage can be surely achieved.

- Differentiation of services as compared to the competitor. The organizations were asked to tick some of the practices they follow that are different from the competitor. The organizations provide faster service and give priority to their regular customers rather than charging extra for their service. This shows the competition is very high in the market, so if they cannot keep the customer by satisfying their needs of cost and quality they may lose them. So only one option is available, i.e., the organization needs to focus on the improvement of internal business functions to reduce cost and improve the quality.
- Potential of lean principles. The usefulness of lean principles is varied for different types of functions as shown in Table 9. The organizations that offer customized services do not find waste eliminations and simplification principles as important in most of their organizational functions except finance and accounting. They also agree that non-value-added

Table 7: Responds or Ranking of Business Function due to Competitive Environment

RANK	1		2		3		4		5		6	
BF	Whole sample											
HRM	23.52		17.64		23.52		11.76		-		5.88	
SM	35.29		23.52		17.64		5.88		17.64		-	
R&D	11.76		11.76		11.76		17.64		5.88		5.88	
FA	-		5.88		17.64		11.76		23.52		11.76	
SO	58.82		29.41		5.88		5.88		-		5.88	
RANK	1		2		3		4		5		6	
BF	Samples		Samples		Samples		Samples		Samples		Samples	
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2
HRM	17.64	5.88	5.88	11.76	17.64	5.88	-	11.76	-	-	5.88	-
SM	17.64	17.64	17.64	5.88	-	17.64	-	5.88	11.76	-	-	-
R&D	11.76	-	-	11.76	11.76	-	17.64	-	-	5.88	-	5.88
FA	-	-	-	5.88	11.76	5.88	11.76	-	17.64	5.88	5.88	5.88
SO	17.64	41.17	17.64	11.76	-	5.88	5.88	-	-	-	5.88	-

Part 1 has respondents (n1 = 47.05 per cent) with experience of 15 years or less, and part 2 has respondents (n2 = 52.94 per cent) with experience of more than 15 years. Following are some of the results:

Table 8: Improvement Practices and Improved Measure in Business Functions

	n1		n2	
BF	Improvement practices	Performance measure	Improvement practices	Performance measure
HRM	• Expert lectures • Customer and stakeholder care • Meetings	Academic Relationship	• Interactive practices • Training and career growth • Faculty development Programme • Conventional gathering	• Satisfaction of stake holders • Capacity building • Relationship
SM	• Advertisements • Brochures	Admission numbers	Marketing • Advertisement	Customers numbers
SO	• Monthly assessment • Technical events • Training of staff	Result of students	• Introduction of new Technology • Layout improvement • Use of internet facility	• Operation Time • Standardization • Quality
F&O	–	–	• Use of software	Speed and reliability
F&D	–	–	• Creating opportunity	Research paper publication

Table 9: Usefulness of Lean Principles for Business Functions

LP	SP		CI		WE		CS		RK		EUSR	
BF	Whole sample											
HRM	52.94		58.82		17.64		52.94		52.94		76.47	
SM	35.29		70.52		11.76		52.94		52.94		29.41	
R&D	23.52		29.41		5.88		11.76		35.29		29.41	
FA	64.70		35.29		11.76		35.29		52.94		58.82	
SO	64.70		64.70		52.94		64.70		52.94		58.82	
LP	SP		CI		WE		CS		RK		EUSR	
BF	Samples		Samples		Samples		Samples		Samples		Samples	
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2
HRM	35.29	17.64	23.52	35.29	5.88	11.76	41.17	41.17	23.52	29.41	35.29	41.17
SM	23.52	11.76	35.29	35.29	5.88	5.88	29.41	23.52	17.64	35.29	11.76	17.64
R&D	17.64	5.88	5.88	23.52	0	5.58	0	11.76	23.52	11.76	11.76	17.64
FA	35.29	29.41	11.76	23.52	5.88	5.88	11.76	23.52	29.41	23.52	29.41	29.41
SO	29.41	35.29	17.64	47.05	23.52	29.41	17.64	47.05	17.64	35.29	29.41	29.41

SP = Simplification of Processes, CI = Continuous Improvement, WE = Waste Elimination, CS = Customer Satisfaction, RK = Record Keeping, EUSR = Effective Use of Staff and Resources

activities always carried out while satisfying individual customer with their specific needs and requirements. They give emphasis to continuous improvement practices for service operation to achieving maximum profit.

- The organizations that offer standardized service experience excellence in adopting each lean principle in every business function of their organizations to satisfy customers with both cost and quality.

6. Conclusion and Future Scope

It is found that Indian service sectors moderately focus on the application of LPs for improving the competitiveness of business functions. It can be further enhanced by creating a model and set of guidelines that assist the organization to implement and improve practices associated with LPs. By using such models — either simulated or prototype based — critical conditions can be examined and improved. Practice can be associated with specific performance measures that can be targeted to improve continuously.

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"The highest education is that which does not merely give us information but makes our life in harmony with all existence."

– Rabindranath Tagore

Feature

Managing Common Property Resources (CPRs) for Rural Development: A Development Perspective

M. SABESH MANIKANDAN AND K. SUNDARAM

India is the second-most populous country with a population of 1,210.2 million, which constitutes 17.84 per cent of the world population. It is a country with 6,49,867 villages, with an addition of 2,279 villages as of now, of which about 833 million reside in the rural area, which constitutes 70 per cent of the population. However, a big part of this population has been leading an uncertain economic life due to non-synchronization of employment opportunities in agriculture sector, because of the fast-growing population. In poor countries, common property resources (CPRs) make a valuable contribution to the sustainable livelihoods of rural populations. Due to the increase in population, there is a progressive degradation in CPRs (because there is no investment in them), especially of fuel wood and fodder. This would eventually result in a situation where it is not possible to extract anything, implying that the ultimate resource availability is zero. In addition, a decrease in fodder availability from the common lands would result in a change in livestock composition. This paper highlights the need to examine the CPR sector for rural development in the context of wider economic policy reform processes in the Indian economy.

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1. Introduction

Rural development has been a significant matter in all discussions pertaining to economic development, particularly in developing countries, all over the world. However, it has attracted the attention of the economists, right from the Mercantilist era and Adam Smith to Marshall and Keynes. So far they were mainly interested in the problems that were essentially static in nature and largely related to a western European framework of social and cultural institutions. Their interest in the economics of development has been stimulated by the wave of political resurgence that swept the Asian and African nations after Second World War and the thought to promote rapid economic development coupled with the realization on the part of the developed nations that 'poverty anywhere is a threat to prosperity everywhere' (ILO, 1944). Meier and Baldwin (1957) have remarked, 'A study of the poverty of nations has, even more, urgency than a study of the wealth of nations.' Different economists have given different opinions — some say an increase in the economy's real national income over a long period of time that the number of people below the *absolute poverty* does not increase, while the others say that the increase in per capita real income of the economy, may not rise the real *standard of living* of the masses.

India is the second-most populous country with a population of 1,210.2 million, which constitutes 17.84 per cent of the world population. Notwithstanding that, it is a country of villages with 6,49,867 villages, with an addition of 2,279 villages as of now, (Census, 2011). Out of the 1,210.2 million population, about 833 million reside in the rural area, which constitutes 70 per cent of the population (Census, 2011). However, a big part of this population has

been leading an uncertain economic life due to non-synchronization of employment opportunities in agriculture sector, because of the fast-growing population. Its improvement is in line with the development of rural communities as a whole. Rural development has been receiving increasing attention of the governments across the world. It assumes special significance for two important reasons: first, about two-thirds of the population still lives in villages and there cannot be any progress as long as rural areas remain backward, and second, the backwardness of the rural sector would be a major impediment to the overall progress of the economy. It is obvious that the total number of village (0.35 per cent) has increased in the recent past, which requires a revisit to rural development in India.

2. Rural Development

Rural development is a process that aims at improving the well-being and self-realization of people living outside urban areas through a collective process. The term 'rural development' is of focal interest and is widely acclaimed in both the developed and the developing countries of the world. There is, however, no universally accepted definition of rural development, and the term is used in different ways and in vastly divergent contexts. The United Nations (1956) defines it as 'a process of change by which the efforts of the people themselves are united with those of government authorities to improve the economic, social and cultural conditions of communities in the life of the nation and to enable them to contribute fully to a national programme.

According to the World Bank (1975), rural development is 'a strategy aiming at the improvement of economic and social living conditions, focusing on a specific group of poor people in a rural area. It assists the poorest group of the people living in rural areas to benefit from development.' In the words of Robert Chambers (1989), rural development is a strategy that enables a specific group of people, poor rural women and men to gain for themselves and their children, more than what they want and need. According to Agarwal (1989), rural development is a strategy designed to improve the economic and social life of the rural poor. It is obvious that rural development is the overall development of rural areas with a view to improve the quality of life of rural people.

In common parlance, rural development refers to the development of rural areas through the extension of irrigation facilities, expansion of electricity, improvements in techniques of cultivation, educational and health facilities, etc. It seems that agricultural development is rural development as it mainly depends on agriculture. Nevertheless, agricultural development can be a part of rural development, but cannot be as a whole. Further, it is believed that improved food supplies and nutrition, together with basic services such as health, education and cultural activities, would directly improve the physical well-being and quality of life of the rural poor, but also indirectly enhances their productivity and ability to contribute to the national economy. In fact, economic development including rural development is closely linked to the development of resources. These resources can be classified into three categories: i) public goods, ii) semi-public goods and iii) private goods.

3. CPR and Rural Development

In poor countries, CPRs make a valuable contribution to sustainable livelihoods of the rural population. This includes the collection of fuel wood, fodder, crop wastes, cow dung, organic manure and other products that are derived from bark, seeds, flowers and fruits of trees, as well as water for drinking, cooking, irrigation and local fisheries. The term 'common property resource' is broadly defined as natural resources over which a group of people have common user rights (not necessarily ownership rights). These include natural forests, village lands, grazing lands, streams, rivers, groundwater, and oceans. These may also include man-made resources like irrigation tanks, community wells and village roads. The existence of imperfect factor markets result in an intimate link between the rural economy and its natural resources base. Inadequate rural employment opportunities, especially in the slack season, imply that the local commons can make substantial contributions to household incomes. Another important function of local CPRs is that they act as insurance against uncertainty in the absence of complete contingent markets. Access to such resources serves to prevent risks associated with natural disasters and crop failure. Furthermore, for landless populations, access to local CPRs may be the only available non-human asset.

3.1 CPR in India

In India, out of the total land area of 330 mm hectare, only about 140 to 147 million hectare are cultivated. The remaining 190 mm hectare, consisting of forests, woodlands, grasslands, deserts, marshes, rivers, lakes, shorelines and other forms of common properties, support

many occupations like forestry and livestock rearing and provide daily requirements like food, fuel, fodder and medicines. According to one estimate, the CPR land area of India is 21.55 per cent of the total geographical area (Chopra, Kadekodi and Murty, 1990). However, its magnitude varies from 9 to 28 per cent of the geographical area in different districts of the country, based on a selected village-level survey (Jodha, 1986). Moreover, according to a recent estimate of CPRs, about 14.81 per cent of the total geographical areas are non-forest CPRs in 16 major states of India, this estimate is very close to the 54th round survey of NSSO (1999) which reported that about 15 per cent of the CPRs in India is non-forest CPRs (Table 1).

4. CPRs and the rural poor in India

The rural poor continue to depend on CPRs because the opportunity cost of labour to harness the inferior options is still lower. Hence, there would be a progressive degradation in CPRs (because there is no investment in CPRs), especially of fuel wood and fodder. This would eventually result in a situation where it is not possible to extract anything, implying that the ultimate resource availability is zero. In addition, a decrease in fodder availability from the common lands would result in a change in livestock composition. As the benefits provided by CPRs are not visible, their degradation is also invisible. The cost of abolishing CPRs, in terms of foregone

Table 1: NSSO estimates of CPRs in India

S. No.	Indicator (All India figures)	NSSO Estimates
1	Share of CPRs in total geographical area	15 per cent
2	CPRs per household (in ha)	0.31
3	CPRs per person (in ha)	0.06
4	Reduction in CPR land in last 5 years (per 1000 ha)	19 ha (0.38 per cent p.a.)

Source: NSSO, 1999

opportunities providing gains to the poor, would be too high to be compensated by other means. Those households owning land will be little affected as they can grow some trees in their lands to cater to the fodder and fuel requirements. The best way to balance both would be to design a mechanism to ensure that both the investing parties as well as the host-country and local people are made better-off (Figure 1).

4.1 Quality of life and social well-being

i) **Income-generating activities**: Regular activities based on CPRs include collection and sale of firewood, leaves made into plates and cups, fruits, grass for fodder, grass for thatching, honey and fish. In fact, on an average, a sum of Rs 693 is earned as annual income through the collections of CPR products in India (NSSO, 1999). Grass and tree fodder may also be fed to small ruminants, which can be a significant source of income, especially for the poor.

ii) **Direct inputs to the home**: In India, the local communities have a tradition of depending on forest resources for living, as CPRs contribute directly and indirectly to rural livelihoods. Humans consume water and various fruits from CPRs, while firewood is essential for cooking. Wood and grass for thatching are used in house construction and maintenance; wood is also used to make furniture.

iii) **A safety net for people in drought years**: Many rural households are extremely vulnerable to unanticipated hardships caused by unemployment, crop failure, etc. Since forests are relatively resilient in the face of drought, many forest-based income-generating activities can continue during the slack season. In addition, some communities in forest areas cut trees in extreme drought years (but not in normal years) and sell the wood or firewood to generate income. Forests and other common lands may also be a source of emergency foods such as weeds, tubers and mammals.

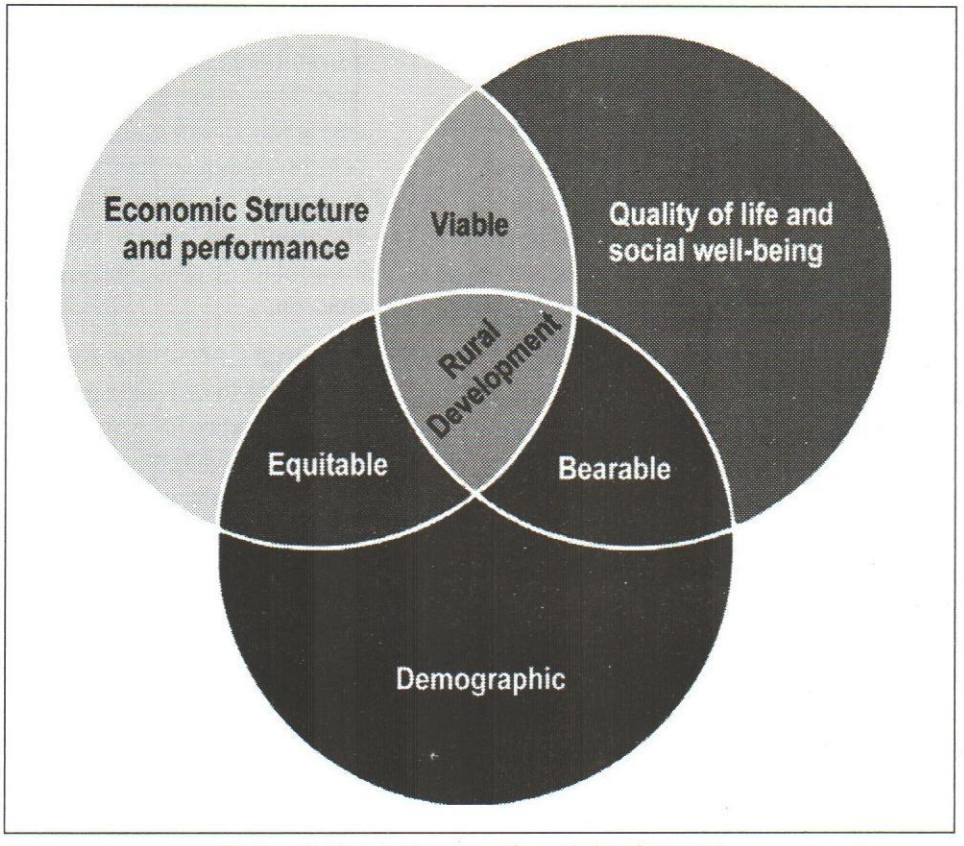

Figure 1: Key indicators of rural development

iv) **Environmental services**: Forests act as a sponge when it rains, regulating water flows, preventing flash floods and prolonging the period during which surface water is available. Where forests are on hillocks near to farmers' fields, they also prevent stones and poor quality soil being washed off the hillock and get deposited in farmers' fields while supplying nutrients to the fields in the form of leaf litter.

v) **Health**: The World Health Organisation (WHO) estimates that 2.2 million incidences of sickness in developing countries can be traced to water- and sanitation-related causes. Human excreta should be disposed of in such a manner as to avoid direct or even indirect problems. In 2011, about 24 percent of the rural population had access to sanitation services (CSO, 2011). In other words, 626 million people living in rural areas do not have access to toilets. It is a fact that disease is a challenge in a developing country like India. The poor management of CPRs such as public toilets, drainages and drinking water are causes for disease in rural areas. Better management of these resources will give pollution-free and disease-free environment to the nation.

vi) **Livelihood Security**: The three primary products of the bush land are crops, trees and grass. These primary products are often combined with other inputs (e.g., labour, capital, livestock) to provide goods and services of value to people, including: i) human food — meat and milk from domesticated livestock, bush meat, gathered foods and cereals; ii) energy — trees, tree products, manure; iii) building materials — tree products, materials for thatching, materials for handicrafts; iv) conservation of biological diversity, including special cases in which local residents benefit from tourism and safaris; and v) sequestration of atmospheric carbon, especially in the roots of deep-rooted trees and grasses.

vii) **Empowerment**: It was found that when the poor, who had significant and substantial stakes in the CPRs that governed within the framework of common property management, were given private land ownership, its productivity was declining. Jodha (1996) also found that in the post-Independence era, new markets opened for some of the CPR products, resulting in over or unsustainable exploitation of the resources. His studies revealed that CPRs had

contributed significantly towards employment and incomes of the poor; per household income per year ranged between Rs. 530 and Rs. 830 in different areas. Thus, the proportion of income from CPRs to total income rendered between 11 and 17 per cent in the case of the poorest household (Rs 4,800 p.a.), and between 8 and 13 per cent in the case of poor households (Rs 6,400 p. a).

viii) **Poverty Alleviation**: The dependence of poorer households on CPRs is still a highly contested issue. It has often been argued that poor people extract more natural resources and are more reliant on them, due to their high social discount rate. Some scholars, however, posit that compared to the non-poor, the poor may depend more on the commons in relative terms, but in absolute terms their dependence is lower (Dasgupta, 1993), particularly for resources with good market opportunities. Consistent with growing theoretical literature on CPR management, there is a large quantum of empirical research in India dealing with the dependence of the poor on CPRs (Jodha, 1986, 1995; Beck and Ghosh, 2000). Beck and Nesmith (2001) noted that CPRs contribute to about 12 per cent of the household income of the rural poor. The access to CPR by the poor is gradually decreasing across all study villages and agro-ecological regions (Beck, 1998).

In the study of CPRs in different states of India, various authors find that CPRs contribute to 1.1 per cent to 22.1 per cent in Gujarat, 10 per cent in Karnataka, 27.3 per cent in Punjab, and 12 per cent of the income of poorer households in West Bengal. This figure for non-poor/cultivating households was 0.1 to 11.4 per cent in Gujarat, 6.2 per cent in Karnataka, 22 per cent in Punjab and 0.13 to 5.62 per cent in West Bengal (Iyengar and Shukla, 1999; Singh et. al., 1996; Beck and Ghosh, 2000). In a study of 29 villages in south-eastern Zimbabwe, Cavendish (1998 & 1999) arrived at even larger estimates. He found that about 35 per cent of income derived directly from the commons. Further, Hecht et al. (1988) concluded that the products offer support to the poorest of the poor, especially women.

ix) **Education**: Educational reforms play a pivotal role in rural development. In realizing the importance of pass on education to the rural people, the governments strengthened the rural infrastructure over time. The village public school is the main source of education for the marginalized sections of a society, being semi-public goods by nature. Quality education minimized the expenditure incurred to education, improved the social status and avoided social inequality. It also reduces the dropout of rural children.

x) **Housing**: CPRs have made immense contribution to the growth of livestock in the rural economy. The main supportive CPRs to livestock are green fodders, which are available and collected from common grazing and fallow lands, cornfields, forests, and river basins. Besides, CPR's materials are also used for roofing, housing and shading for livestock. It is evident that the CPR products such grass, thatch and bamboo are the predominant materials for roofing for 44.19 million (21 per cent) houses. Further, grass, thatch, bamboo, plastic/polythene, mud, unburnt brick & wood were predominant materials for 87.64 million (42 per cent) houses; and mud, wood and bamboo were the primary materials for floor for 129.52 million (63 per cent) rural houses in India (Census, 2011).

xi) **Local government**: The recent policy initiatives for CPRs in India, such as joint forest management, guidelines for integrated watershed development and National Rural Employment Guarantee Act (NREGA) (2005) have emphasized decentralization and management of CPRs by local communities. However, an increase in the relative importance of downstream service functions may re-introduce the resource interests of distant, non-local, stakeholders into management systems. It helps the local resources management by the stakeholder to adapt their CPR management practices.

4.2 Economic Structure and performance

i) **Agricultural Production**: The role of CPRs in food production and filling the food gap in India has increased because of the management and the increased access to CPRs, particularly in irrigation channels. The bulk of the additional production of food grains, especially of marketable surplus, has come mainly from irrigated areas. However, there has been some controversy with respect to the increase in agricultural production due to irrigation

because of the complementary role of seeds, fertilizers, credit pricing and other factors. It can be said that a 'with' and 'without' methodology, often used for estimating the contribution of irrigation to food production, shows that yields per hectare have increased substantially due to irrigation. In addition, there are gains due to increasing area under cultivation, raising cropping intensity and improvement in cropping pattern, which were made possible due to rapid development in irrigation channels. Irrigation channels are also the catalyst for use of other inputs. Development and better management of irrigation channels are, therefore, needed for attaining the objective of food security.

ii) **Fisheries**: India occupies an important place in the global fisheries scenario, being the sixth largest producer of fish in the world and the second largest producer of inland fish. It has made great strides during the last decades, with the production level increasing from 6.30 million tonnes in 2004–2005 to 10.06 million tonnes in 2014–2015, thus registering an average annual growth rate of about 5.2 per cent. Out of the total yield of 10.06 million tonnes of fish in 2014–15, the marine and inland sector yielded 6.49 and 6.57 million tonnes respectively. About 3.57 million of fisher-folk covered 3,322 villages, getting employment from 7.36 million ha of inland water bodies. The fisheries offer an attractive and promising employment, livelihood and food security sector in India.

iii) **Enterprise**: Cottage industries are customary in nature and cater to most of the local populations, who provide raw materials available in the locality. It engages about 50 million people in India. CPRs play a key role in sustaining the rural cottage industries, by providing the main source of raw materials, such as wooden implements, tendu leaves, gums and resins, cane and rattan, bamboo, grass and fodder, drugs, spices, herbs, etc., for a large majority of cottage industries, as well as house-dwelling materials. It ensures the livelihoods of households engaged in cottage industries. There are number of non-wood forest-based industries that are contributing to the rural economy and providing employment to several lakhs of people in different parts of the country.

iv) **Labour force attributes**: Even though the earning opportunities and capacities of the rural masses have increased, the migration of rural masses to urban areas can be arrested. Along with the development of agricultural sector, it is necessary to create employment opportunities for the workforce that cannot be engaged in agriculture. Such workforce will have to the absorbed locally in the rural area itself by establishing cottage industries in each village. This should be done in such a manner that the village or a manageable group of villages should become self-supporting and self-content with respect to employment and daily necessities of life, as far as possible.

v) **Business infrastructure**: It seems that in every development unit, a major industry or manufacturing unit is established, such as bicycle, motorcycle, tractor or agricultural equipment, and its ancillary units should be spread all over the area, which will manufacture and supply the various parts required for the main product. There are also man-made CPRs created by the governments through various rural development and employment generation programmes, such as rural roads, culverts and small bridges, to perform every day rural business especially agri-business, viz., treating as thrashing floor, drying food grains, drying agricultural by-products, etc. Moreover, the culverts and small bridges are used for irrigation, transport and others facilities in rural business.

vi) **Investment**: Both the central and state governments created and renovated various CPRs, such as community hall, burial ground, public schools, public toilets, common water resources, for the benefit of the rural masses and the well being of the society. In fact these resources were created and are maintained with an idea that these will ensure the social harmony and well being in the future. The profit of these resources can be in the form of increase in asset value, reducing social dispute, increasing social status, and public health. Nevertheless, the government can lessen the burden and create communal harmony and public health care by maintaining these resources.

vii) **Financial viability**: The productive activities could be divided depending on the nature of raw materials, industry and market. By providing the raw materials to the rural cottage industry, the residuals are left and final products are used as raw material deserves the weight loss industry where the transportation

Table 2: Use of CPRs

Indicator of use		NSSO
Households reporting collection of any materials from CPRs		
Collections per household	Average value	693
	As percentage of consumption expenditure	3.02 per cent
Fodder	Households reporting grazing on CPRs	20 per cent
	Households possessing livestock	56 per cent
	Households collecting fodder from CPRs	13 per cent
	Households cultivating fodder on CPRs	2 per cent
	Average quantity of fodder collected (365 days)	275 kg
Fuel wood	Households reporting collection of fuel wood from CPRs	45 per cent
	Percentage of households reporting use of fuel wood	62 per cent
	Percentage of households reporting sale of fuel wood	1 per cent
	Average quantity of fuel wood collected (365 days)	500 kg
	Average quantity of fuel wood sold (365 days)	24 kg
	Share of fuel wood in value of collection from common properly resources	58 per cent
Common water resources	Percentage of households utilizing for irrigation	23 per cent
	Percentage of households utilizing for livestock rearing	30 per cent
	Percentage of households utilizing for household enterprise	3 per cent
	Percentage of households utilizing for fishing	3 per cent
GDP*	Percentage share of agriculture, forestry & fishing to total GDP in 2014–15	5.58 per cent
	Percentage share of fisheries to total GDP in 2014–15	0.92 per cent
	Percentage share of forestry to total GDP in 2009–10	0.9 per cent

Source: NSSO, 1999, *GoI, 2016

costs of raw materials and final product is a minimum. Further, the quality of the CPRs as it helps to locate the resource based industry, opportunity cost of the CPR use can be the investment particularly in the rural business. However, the financial viability of a CPR venture proposed to be taken up by a farmer in India depends on the cost of material and labour (other than that of his own or family members) and rate of growth and yields.

viii) **Productivity**: The CPRs ensure the food security of the rural poor. As mentioned above the poor purchasing power and the food security gap are fully covered by these resources. By availing of meat, milk and milk products from animals for their own consumption and for earning household income, their food security is linked to their own productivity in which CPR utilization pattern plays a critical role.

ix) **Consumption**: In the Indian context, it is especially important as still 78 per cent of the rural people and 30 per cent of the urban population is dependent on fuel wood and chips as their main fuel. In certain pockets of the country, CPRs are providing the basis for income generation for households with multiple options, quite distinct from the role as providers of subsistence incomes. It contributes to about 3 per cent of the rural household consumption expenditure (Table 2). Changes in the importance of different CPR functions could lead to different kinds of shifts in the control, governance and conflicts over these resources. The heavy dependence of the rural poor links these resources to the dynamics of poverty and to development interventions centred on the poor. Therefore, any change in the status and productivity of CPRs directly influences the economy of the rural poor.

x) **Physical supply**: CPRs are critical to sustainable livelihood strategies of the poor in India, ranging from directly visible contributions in terms of supplying physical items like food, fibre, fodder, fuel, timber, fish, etc., to less valuable gains implied by sustainability of farming systems, renewable resource supply, drought period maintenance, etc., in arid and semi-arid regions in India (Table 2). The total value of non-timber goods and services available from tropical forests in India was a minimum of Rs. 14047 to a maximum of Rs. 22899 per hectare annually. In India, forests produced about 3.2 million cubic metres (mcm) in 2011.

xi) **Employment features**: Enrichment of CPRs has the potential to generate employment opportunities for the rural community. CPR product collection provides 136 to 196 man-days of employment per household per year. CPR-related income accounts for 17 to 23 per cent of the total household income from other sources. Further, NREGA (2005) guaranteed at least 100 days of wage employment in a year by regenerating and managing CPRs such as roads, canals, ponds, wells for every household in rural areas.

xii) **Direct inputs to agriculture**: In India, marginal and small farmers hold 78.2 per cent of the total landholdings. Wood from forests is used in making agricultural implements and bullock carts and in fencing fields. Foliage from forests and non-forest land-based CPRs is needed to feed livestock, some of which is an integral part of the agricultural system. Drinking water for livestock is another pre-requisite for their maintenance, which often comes from CPRs, such as rivers, village ponds and tanks (Table 2).

4.3 Demographics

i) **Population**: Of the total population, about 70 per cent lives in rural areas in India. Rural areas have a very low population density. According to 2011 census, the density of rural population was 383 people per square kilometre. During 2001–2011, the population increased by 181.4 million, of which rural areas increased by 90.4 million. The child population declined by 5 million with a sharp decline of 8.9 million (7 per cent) in rural child population. Out of 778.5 million literates, about 493 million of the population belong to rural areas. The massive growth of population is a severe strain on the natural resources all over the world (Hardin, 1968). It causes social unrest in a developing society particularly in rural areas. In India, about 21 per cent of communicable diseases are related to unsafe water and more than 1600 deaths per day are caused by the water-borne diseases (WHO, 2016). Further, hygiene practices continue to be a problem as only 14 per cent of the population has access to a latrine in rural India.

The heavy dependence of the rural poor links CPRs to the dynamics of poverty and development interventions centred on the poor. According to the NSSO report (1999), the average landholding size stood at 0.84 ha, while each household had access to 0.31 ha of CPR land. Moreover, the average value of annual collections per household from CPRs was Rs. 693, which amounts to 3 per cent of the average consumption expenditure of a rural household. Therefore, any change in the status and productivity of CPRs directly influences the economy of the rural poor. In most parts of the country, the area of CPRs has declined by 31 to 55 per cent as land reforms have been introduced (Iyengar, 1988; Blaikie, Harriss and Pain, 1985; Oza, 1989; Chopra, Kadekodi and Murty, 1990; Chen, 1988; Arnold and Stewart, 1990). The pressure on the remaining CPRs has rapidly increased as a combined result of the reduced area of these resources and population growth. It is obvious that the per capita availability of the CPRs noticed a decline of about 19 ha per 1000 ha (0.38 per cent per annum) within a period of five years (Table 1). The CPR-based collection for daily

household purposes completely depended on the females in rural areas. Local CPRs were very important in the economy of rural people in general and women in particular. Women and children were the sole or significant collectors of various items from CPRs. Women by virtue of their gender role and domestic responsibilities had been pushed in their efforts to meet daily household needs from CPRs. However, the reduction in land area, poor maintenance and the decline in carrying capacity lead to reduced supplies of products.

ii) **Migration**: Including India, most of the world's poor live in rural areas. In every four people, three are poor and live in rural areas, where they depend on natural resources for their livelihoods (USAID, 2006; Lee and Neves, 2009). Further, poor environmental conditions, coupled with low investment levels, can create a downward spiral of resource degradation, poverty and migration. The increase in poverty and land degradation is positive in nature in poor countries; this degradation in CPRs forces locals to migrate to urban areas in search of livelihood. It also shifts the employment pattern of the rural community. Besides, socio-demographic factors, land degradation, land availability and climatic variability are significant variables in explaining migration (Henry et al., 2003). Such environmental problems obviously change livelihood and forces people to migrate (Black, et al. 2011; Poston Jr., et al. 2009).

iii) **Cultural Issues**: In the case of management of natural common, globalization affects local cultural units' management in many ways. This is because of the process of management of commons in small-scale societies varies in degree and kind. It has variety in management practice. For example, commons for livelihood issues are managed differently and commons for religious purposes (which have a psychological attachment, and a belief system) are managed differently. The religious commons play a vital role in local culture and are conserved and managed for the psychological strength it gives to the village social system. Most of the common resources in the small-scale societies are multifunctional. It has a manifest as well as latent function in common management. Moreover, it is quite common that the CPRs are mostly used by the dominant sections of the society and the poor people are rarely allowed to enjoy their benefits.

iv) **Change and structures**: Globalization brought changes in administration pattern through centralized control over general management. The impact of globalization on commons showed various patterns of ownership, control, use and misuse. The commons are subject to degradation as well as conservation in the process of centralized management. After Independence, the administration of natural resources came in the hands of the respective specialized departments, for example forest or revenue departments. All land apart from private land was regarded as state property and was controlled by the state. Globalization creates an impact on the local cultural domain and this interaction is an ongoing process. The different cultural units feel the effect of globalization differently. The larger cultural units imbibe it, while the small-scale ones confronts it, though gradually most of the times they succumb to pressures.

5. Policy options

Policies regarding CPRs are likely to reflect ideological and organizational principles that govern wider economic processes. Current policies regarding the Indian economy are dominated by objectives that emphasize 'sound' micro- and macro-economic management, and include, among others, the liberalization of markets, export promotion, the reduction of 'wasteful' public expenditure, and managing the monetary sector (interest and exchange rates). There is growing consensus on the desirability of these policies, driven in part by external pressures, but also increasingly due to their adoption by national policy makers as aspects of basic economic governance. The reform process is associated with a shrinking role for the state and a greater emphasis on private enterprise.

The impacts of liberalization on natural resources and the CPR sector, however, are ambiguous. In the case of forests, for instance, proposals for greater involvement of the private sector in regenerating degraded lands have been put forward, but have also been successfully resisted at the highest levels of policy making. Guidelines for joint forest management and integrated watershed development programmes emphasize the need for managing such resources in partnership with collective organizations that represent local interests. Further, the NREGA (2005) was commenced with the objective of enhancing the livelihood security of the rural masses. At the same time, specific industries (especially mining) have been pushing for the

easing of regulations regarding their ability to operate in scheduled (tribal) areas, as well as lifting restrictions on the transfer of land to non-tribals. There appear to be contradictory processes at work, simultaneously pushing for a celebration of the collective and communities (in the case of decentralized natural resources management), as well as the market and individuals (in the case of greater private sector involvement). The motivation for reform in both cases is a perception that the state and its functionaries are incapable of managing resources in the case of the rural commons and economic activity in the case of liberalization, and that these functions need to be minimized. The minimal state, reduced to its basic regulatory functions, is compatible both with community-based natural resource management and privatization. To this extent, the broader neo-liberal agenda that dominates Indian economic reform strategies does not appear to be significantly threatened by the collectivization and decentralization of resource use that has been emphasized by recent initiatives relating to the CPR sector.

In this connection, the present paper highlighted the need for managing the CPR sector in the context of wider economic policy reform process in the Indian economy. What these policy processes share is a critical re-examination of the role and functions of the state in the context of resource allocation and its use, and the need to include a wider set of actors in the process of decision-making. Now it has an urge to contemplate our policies and actions on economic policies and planning methods driven through the use and betterment of CPRs in rural areas to accelerate inclusive growth rate and development of national economy.

6. Conclusion

While the CPR has a unique role in providing food and food security, it shares this role with several other sectors in providing livelihoods, viz., social, economic and environmental securities for sustainable development. And yet, it is the income-generating power of the CPR which is most important for poverty alleviation, since it helps in the attainment of both CPR and food security and enables people to be self-sustaining over a long period without any resort to subsidy. Breakthroughs in productivity and income in poverty-concentrated areas can take place by creating CPRs. Water reservoirs of all types and sizes, watershed management, recharging underground water storage, etc., should be taken with renewed vigour, but without losing sight of the environment and human aspects. Technologies and institutions catering to small farmers may receive special encouragement. Development of power will be needed for exploiting groundwater potential and operation of grain storage facilities, especially regurgitated ones. Drainage schemes may be fed into irrigation schemes to maintain favourable salt balance in the soil. At the same time, the output from permanent CPRs like tanks, ponds, with respect to fishery and agriculture products like makhana and singhara in India, should be raised with appropriate methods including regular distilling and deepening. These measures taken along with those for strengthening institutions of marketing, credit and grain storage will boost agricultural production and sustainable development in rural areas. It is therefore high time for us to contemplate our policies and actions and adopt only such economic policies and planning methods that can be of benefit to the majority residing in our rural areas. Hence, planning for the development of rural areas attracted attention as a developmental agenda for the economy of India.

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"The highest result of education is tolerance."

– Helen Keller

DATABASE

Higher Education: India *vis-a-vis* Select Countries

RAJESH SUND

Introduction

Every country in the world wants their education system to be the best and for their students to obtain necessary skills and knowledge to meet the challenges of the 21st century. Higher education is a dynamo for economic growth, powering the supply of high-level skills and the technological advances for improving productivity and opening up new markets. There has, in fact, been considerable improvement in the higher education scenario of India in both quantitative and qualitative terms.

As per the All India Survey on Higher Education (AISHE) 2015-16, total enrolment in higher education has been estimated at 34.6 million, with 18.6 million boys and 16 million girls. Girls constitute 46.2% of the total enrolment. The Gross Enrolment Ratio (GER) in Higher Education in India is 24.5%, which is calculated for the 18 to 23 years age group. GER for male population is 25.4% and for females it is 23.5%. For Scheduled Castes it is 19.9% and for Scheduled Tribes it is 14.2%, as compared to the national GER of 24.5%. Enrolment at all the levels has increased over the years. The Compound Annual Growth Rate (CAGR) is 3.5% during the 5 years, but in the case of integrated courses, the CAGR is 16.0 % as in table 1.

The future of Higher Education will depend on successful, sustainable, mutually beneficial partnerships and collaborations, not just in a single area (such as student mobility), but with a holistic approach which facilitates (a) mobility of students, staff and researchers, as well as qualifications and institutions (b) shared teaching and (c) delivery partnerships and research collaborations. There is a rise in the number of countries with commitment towards international higher education at national level. These are strong signals of readiness to engage internationally and to support their Higher Education systems' global positioning. Given the growing prominence of government engagement in international Higher

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Education, and the interdependencies between national Higher Education systems, there is a need for greater co-ordination between policies with a view to achieving greater impact.

The Institute of Management Development Switzerland publishes World Competiveness Year Book annually. A number of Higher Education variables such as Higher Education Achievement, Student Mobility Inbound, Student Mobility Outbound Educational System, University Education and Management Education etc. are provided for 61 major countries. A comparison of these indicators for various select countries data is given in table 2 to table 7. It can be seen that India has shown higher growth over the years as compared to leading countries such as Japan, USA and United Kingdom in certain parameters like Higher Education Achievement, Educational System, University Education and Management Education. Countries like Singapore and China Mainland have also shown substantial growth in Higher Education over the years. However, with regard to meeting the needs of a competitive economy, China Mainland has shown a decline over the previous years as compared to India.

Table 1: Student Enrolment CAGR

Year	Student Enrolment								
	Ph.D.	M.Phil.	Post Graduate	Under Graduate	PG Diploma	Diploma	Certificate	Integrated	Grand Total
2011-12	81430	34154	3367190	23174950	196159	2071609	184717	74122	29184331
2012-13	95425	30374	3448151	23890309	194072	2207551	191871	94664	30152417
2013-14	107890	31380	3822219	25500325	276502	2285576	187340	125002	32336234
2014-15	117301	33371	3853438	27172346	215372	2507694	170245	141870	34211637
2015-16	126451	42523	3917156	27420450	229559	2549160	144060	155422	34584781
CAGR	9.7	4.5	3.1	3-4	3.2	4.2	-4.9	16.0	3.5

Source: All India Survey on Higher Education (AISHE) 2015-16

Table 2: Higher Education Achievement
(Percentage of population that has attained at least tertiary education for persons 25-34)

COUNTRY	2011	2012	2013
Singapore	72.0	74.1	76.3
Japan	59.0	59.0	59.0
China Mainland	26.9	30.0	37.5
Switzerland	40.0	41.0	46.0
Malaysia	30.9	31.3	33.5
France	43.0	43.0	44.1
India	19.5	19.0	22.6
Philippines	26.2	21.3	21.3
Thailand	18.0	18.0	18.0
USA	43.0	44.0	45.7
United Kingdom	47.0	48.0	49.2

Source: IMD World Competitiveness Year Book

Table 3: Student Mobility Inbound

(Foreign tertiary level students per 1000 inhabitants)

COUNTRY	2011	2012	2013
Singapore	9.24	9.97	9.06
Japan	1.19	1.18	1.07
China Mainland	0.06	0.07	0.07
Switzerland	5.28	5.59	5.86
Malaysia	2.19	1.91	1.34
France	4.24	4.16	3.65
India	0.02	0.02	0.03
Philippines	0.03	0.03	—
Thailand	0.17	0.32	0.32
USA	2.27	2.36	2.48
United Kingdom	6.64	6.71	6.52

Source: IMD World Competitiveness Year Book

Table 4: Student Mobility Outbound

(National tertiary level students studying abroad per 1000 inhabitants)

COUNTRY	2011	2012	2013
Singapore	4.07	4.10	4.18
Japan	0.28	0.26	0.25
China Mainland	0.48	0.51	0.52
Switzerland	1.49	1.50	1.48
Malaysia	1.89	1.88	1.86
France	0.93	0.96	1.28
India	0.16	0.15	0.15
Philippines	0.12	0.12	0.12
Thailand	0.38	0.38	0.39
USA	0.18	0.18	0.19
United Kingdom	0.44	0.44	0.43

Source: IMD World Competitiveness Year Book

Table 5: Education System

(Educational system meet the needs of a competitive economy;0-10)

COUNTRY	2011	2012	2013
Singapore	8.17	8.27	8.18
Japan	5.72	5.27	5.70
China Mainland	3.67	4.59	4.21
Switzerland	8.65	8.74	9.11
Malaysia	6.86	6.70	6.32
France	6.16	5.70	6.03
India	4.89	5.37	5.46
Philippines	5.31	5.51	5.59
Thailand	3.62	3.93	4.30
USA	5.89	6.37	6.28
United Kingdom	5.84	6.41	6.51

Source: IMD World Competitiveness Year Book

Table 6: University Education

(Educational system meet the needs of a competitive economy;0-10)

COUNTRY	2011	2012	2013
Singapore	8.10	8.14	8.18
Japan	4.74	4.19	4.43
China Mainland	4.26	5.05	4.50
Switzerland	8.68	8.56	8.80
Malaysia	6.90	6.68	6.22
France	6.10	5.34	6.03
India	5.17	5.42	5.77
Philippines	5.85	5.85	6.15
Thailand	4.53	4.16	4.62
USA	7.64	7.39	7.51
United Kingdom	6.28	6.58	6.51

Source: IMD World Competitiveness Year Book

Table 7: Management Education

(Management Education meet the needs of a business community; 0-10)

COUNTRY	2011	2012	2013
Singapore	7.86	7.73	7.59
Japan	4.59	4.19	4.32
China Mainland	4.82	5.19	5.05
Switzerland	8.38	8.34	8.69
Malaysia	7.28	6.88	6.40
France	6.00	5.02	4.91
India	6.16	6.11	6.62
Philippines	6.26	6.35	6.41
Thailand	4.89	4.73	5.26
USA	7.93	7.29	7.74
United Kingdom	6.16	6.29	6.63

Source: IMD World Competitiveness Year Book

Source:

1. All India Survey on Higher Education (AISHE) 2015-16
2. IMD World Competitiveness Year Book 2013, 2014, 2015 & 2016

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