VOLUME 4, NO.2, JULY, 2013 & VOLUME 5, NO.1, JANUARY, 2014

Social Inclusiveness of Indian Science Centres and Museums : A Snapshot through Case Studies (Part-III)

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Abstract

Currently, Science Museums and Centres in India are in a process of transformation in response to social and economic imperatives at local, national and global levels. As mentioned earlier, several models of impact studies have been envisaged for European and American counterparts; however, these have been seldom attempted in Indian scenario except a few individual reporting [Hoyt et al, 2011; Rautela et al, 2011; Dutta Choudhury, 2011; Patairiya et al, 2010]. Social inclusiveness in terms of visitor turnout, participation of people with special needs, role of this sector in addressing the needs of the locals especially in organising personal growth has been dwelt upon in the Part-II of this series. In this last and final part, certain aspects of inclusion issues, especially those of financial accessibility of Indian Science Museums and Centres, have primarily been attempted.

Introduction

Impact studies, because of some reasons or the other, have turned out to be a sustained area of interest among the museum fraternity for years. Literature studies indicate that it was during early eighties of the last century, such studies, primarily on individual institution basis, were at times undertaken, that too, mainly in USA and partly in UK. But the same on the science centre and museum arena was reported inthe laterstage (Falk and Dierking 1992,Garnett 2002; Groves 2005;Falk & Sheppard, 2006; Friedman, 2007, 2008; Persson, 2000, 2011; Falk& Needham, 2011,Falk, Dierking, Needham, &Prendergast,2014). Today, this sector globally is confronting a host of issues- the global economic downturn, the question of welfare systems, waning governmental support to such institutions, the digital shift and change in people's preference, emergence of entertainment industry and so on. This results in difficulties to assess the economic and institutional impacts of this sector despite the fact that the number of museums has increased substantially in the last few decades; they are more accessible with modern outfits; they are more networked, inclusive resorting to niche marketing strategies by way of becoming participatory to the local community. They are adept at handling aspirations of diverse audiences nowadays. The multidimensional and multi-faceted value (personal, social, cultural, economic, environmental etc.), this sector contribute to generate and spread to the society, is a matter of contemporary interests.

Rationale

With the change of psychographic terrain of modern visitor minds, visits to Science Museums and Centres are becoming an important leisure, holiday and non-formal learning activity. Visitors in the role of consumers spend hefty amounts visiting museums, both in terms of entry fee, other tickets for important facilities like 3D programme, Space theatre etc. and expenses in souvenir shops and food outlets. These expenditures have a strong effect on local economies, especially for those in popular tourist areas. Notwithstanding diverse approach in respect of content, size, age and institutional forms, Indian Science Museums and Centres share some particularities and similar functionalities. In economic parlance, such an institution may be looked at as an economic unit providing certain services. To be more precise, it connotes to a relationship between the inputs (exhibits, manpower etc.) and output measured, e.g., revenue. On the other hand, the effect of these institutions on the local economy leaves room for extensive analysis in terms of generation of employment, value addition to other sectors.

Studies in Indian context indicate that the entry fee in Indian socio-economic scenario somewhatregulates the flow of visitors of a particular area in the science centres and museums.At times, a Science Centre (or Museum) arranges to develop/host new exhibitions or conduct special programmes, and takes recourse to concessional rates for organised groups to augment visitation figures, even though econometric estimates for a large number of different museums in various countries suggest that the demand for museum services is price inelastic.

Using US data from the Museum Survey of 1989 (Luksetich and Patridge, 1997), it is estimated that price elasticity demand functions for different types of museums range from - 0.12 to - 0.26, depending on the type of museums whereas the same for cinema visits, live performing art, long drive in cars in US being -0.87, between -0.4 to -0.9 and -0.31 respectively. However zoos, science museums and natural history museums showed the largest price sensitivity, probably due to greater competition from the other leisure activities. Overall, the low price inelasticities suggest that museums could generate significance increases in revenues through increasing admission fees.

Apart from price elasticity issues, however, the question of opportunity cost of time comes out to be an issue to reckon with persons from higher income group or those who are self-employed, the opportunity cost of time is higher than for people of low income group or those on fixed working hours as they are expected to visit museums more often, if all other conditions remain the same. In case of tourists as visitors, the opportunity costs of time are likely to be lower than the local population, since they have the express purpose of visiting the museum.

While elucidating on the economic aspects of science centres, the issue of alternative leisure activities such as going to some cultural events, taking part in any other social activities like in sports, visiting shopping malls or amusement parks cannot be ruled out. Even within the same organisation, one science centre may be an alternative destination to the other. Within National Council of Science Museums (NCSM), two major units Science City and BITM are situated in the same city Kolkata. The crux issue is whether these two organisations are supplementary or complementary to each other. Apart from the aspect of complementary costs like the costs of travel, accommodation, may be meals etc., income of the local population is another determinant affecting the demand for museum visits.

Econometric estimates show an income elastic demand favouring more visitation pattern for higher income groups (Withers 1980), even though, as referred to earlier, the rising opportunity cost of time goes hand-in-hand with higher income. There is also a high co-relation between income and education on one hand, and visitation on the other. Better educated people, in absence of gratuitous/proactive services of the museums, are unlikely to derive more benefits from Science Museums and Centres and those lower ineducation (Gray, 1998). This factor is more pronounced in art and history museums than with Science &Technology Museums and Centres.

Other than the above, Science Museums and Centres cater to the social demand creating social value which cannot be reflected in monetary terms. While people do value the possibility of enjoying or discuss issues in such a setting with beneficial social affects, these institutions also in certain instances produce negative external effects like traffic congestion, noise etc., through visitor movements on the local community. Yet, it cannot be gainsaid that Science Museums and Centres in India play important roles as economic actors by creating additional jobs, vocation for local people and commercial revenue particularly in the food industries that leads multiplier effect results. The area adjoining Science City, Kolkata along the Eastern Metropolitan (EM) Bypass has been turned into one of the important zones with numerous economic activities like hotels, institutions, shopping malls, hospitals and so on in Kolkata only after Science City set the ball rolling with its inauguration in the year 1997. Prices of land along the EM Bypass have gone up manifold than compared to those of any other locality in Kolkata. This leads to the iconic multipler effects as far as economic activities of a science-centre-type-institution in a larger scale with components of edutainment are concerned. It is worthwhile to make mentionof Seaman, 2002 in this context, who wrote in the article "CVM vs. Economic impact: substitutes or complements" that the so-called impact studies measuring additional market effects created go down well very much with politicians and administrators as they seek to find reasons for spending money on this sector.

Case Study

At the backdrop of all the above referred aspects of a complex issue, we attempted to explore the social inclusivity of a set of 39 science museums, science centres, natural history museums and planetariums (Annexure-A) dotted all over the country from economic standpoint through questionnaire survey (Annexure-B) and in some instances, through in-situ

analysis of current practices. While doing so, we take into consideration the struggle of about 27 crore (270 million) Indians, out of 123 crore (1230 million), living below the poverty line. Finance is essentially the most basic constraint to the majority of the Indian population. So the economic dimensions have become more and more relevant to the cultural sector in India, more precisely to the Science Museums and Centres in this country which are unlike the collection based museum where conservation is the key. On the contrary, as an extension of classroom engagement in a non-formal setting, the learning outcomes, or more precisely, impact assessments of this sector have been the subject of some of the publications in recent times using different methodologies (Rautela, G S, 2000). But the evaluation of socio-economic impact or financial inclusiveness has not yet been evaluated, or at least reported.

The economic impact of a science centre traces the flow and level of spending that can be attributed to the activities of a science centre. It also estimates the economic impact of the science centre on a defined economic region over a particular time period. This is made up of primary and secondary impacts. Direct impact, among other things, is made up of spending by the science centre itself, and of the jobs that it provides; spending by people who visit the region in order to go to the science centre. Indirect impact refers to extra business generated for suppliers of goods and services to the science centre and its visitors; and the induced impact of increased 'consumption spending' in the region as a result of larger wages and increased organisational revenue being returned to the local economy by the science centre and their suppliers.

Results & Discussion

I focused my study on financial inclusiveness and economic impact of the science museum and science centre sector in India stemming from its diverse activities & projects and as seen (and measured) as a contribution to the local economy in a multi-faceted manner in terms of :

- Ticket rates vs. Per Day Per Capita Income
- Entry Fee for Student Visitors'
- Revenue Growth in the last 5 years
- Expenditure (Budget) Growth in the last 5 years
- Programmes for Socio-economic Growth of the Locality in the last 5 years
- Active and Passive Influence on Local Economy (multiplier effects)

Study of financial inclusion on the basis of entry fee, fees for other facilities and per day per capita income of local population of the institutions under survey :

Mr K. C. Chakrabarty, former Deputy Governor, Reserve Bank of India, defined financial inclusion as "the process of ensuring access to appropriate financial products and services needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost in a fair and transparent manner by mainstream institutional players." But in science centres, financial inclusion broadly means accessibility of the centre to the people from all the economic strata of the society.

On analysis of the information compiled in the Table 1, Table 1.1 and Table 1.2 (page no. 44, 45), we may conclude that in 26 out of 38 Indian Science Museums, Science Centres and Planetariums, it is found that the local people spend approximately within 10% or less of their per day per capita income for effecting a family visit only as entry fee (i.e. only to see all the non-ticketed facilities) and within 30% of their per day per capita (pdpc) income for effecting a family visit including availing of all other facilities of those organizations which are in ticketing zones (like 3D, Planetarium etc.) respectively.

On the Basis of Entry Fees

On an average, a person needs to spend 10.21% per day per capita (pdpc) income of the state he/she belongs to for just entering into the science centre/museum premises for visiting non-ticketed facilities. The measure of dispersion (standard deviation) 7.72% indicates that the entry fee spreads out over a large range. For example, entry at NMNH (both in Bhubaneswar and Bhopal) is free whereas PGSC charges of Rs. 75/- and Guwahati Planetarium Rs. 30/- which are found to be quite on the higher side when compared with the per day per capita income of the respective places (36% of pdpc income).

On the Basis of Entire range of Fees (including Entry Fees)

There are 7 science centres (out of 38) in India where costs of availing of all facilities including entry fees are extremely high. These centres charge more than 50% of per day per capita (pdpc) income of the corresponding states (local income). Along with entry fee, a person spends on an average 27.82% of per day per capita income for availing all the facilities in an Indian Science Centre. But the most interesting part is the measure of dispersion (standard deviation) which being remarkably high at 23.68% indicates that this entire range of fees spreads out over a large range.

Emerging Scenario due to New Fee Structure (to be introduced from June 1, 2014)

But when the revised entry fee structure in NCSM science centres, which became effective from June 1, 2014 is considered, as presented in the Table 1.3, we find that the average entry fee is going to increase by 4.18% (from 10.21% to 14.39%) of per day per capita (pdpc) income.

Burden of Fees on Students

Table 1.4 (in page 46) reveals that a student on an average spends 1.8 % of per day per capita (pdpc) income of the respective state only for entering to the Indian science centres/ museums and his/her average spending for availing all the facilities along with entry fee is 4.26% of pdpc income. This result indicates discomfiture so far as its telling effect on the visitation figure of the student groups especially from the lower rung of the society is concerned. After all student community forms the primary target marketing zone for Indian Science Centres/Museums.

Financial Inclusion in other Art, Culture Institution (based on entry ticket)

Kolkata being the cultural capital of India, we selected the model of Kolkata. We chose 3 model institutions- Indian Museum (Kolkata), Alipore Zoo (Zoological Garden, Kolkata) and INOX (a Cinema Hall network chain, the least price of a ticket has been considered).From Table 1.5, we may readily conclude that visiting INOX theatre for a movie is the costliest of all enjoyment options in Kolkata, as compared to other amusement zone like a Zoo or a Museum. Another interesting scenario should not escape one's notice that Alipore Zoo is costlier than visiting BITM. Moreover, enjoying all the facilities of Science City, Kolkata is less costly than seeing a movie in INOX theatre.

Sl.No	Centre Name	Entry Fee	Other Fees	A Family Spends (entry only)	A Family Spends (including other facilities)	Per capita income of the State (2010-2011)	Per day per capita income (=PCI/365)	% of per day income of 4 persons, spending only for entry	% of per day income, spending including other facilities
xx	xx	Per head	Per head	(2 adults + 2 child)	(2 adults + 2 child)	(at current price)	xx	xx	xx
1.	BITM	15	52	60	268	48536	133	12	51
2.	NSCD	30	20	120	200	150653	413	8	13
3.	VITM	30	27	120	228	60946	167	18	35
4.	NSCM	30	70	120	400	83471	229	14	44
5.	SCTY	30	70	120	400	48536	133	23	76
6.	RSCL	15	45	60	240	26355	73	21	83
7.	RSCBBSR	10	17	40	108	40412	111	10	25
8.	RSCG	20	50	80	280	30569	84	24	84
9.	RSCNAG	10	45	40	220	83471	229	5	25
10.	RSCBHO	10	12	40	88	32222	89	12	25
11.	RSCCALI	10	35	40	180	71434	196	6	23

Sl.No	Centre Name	Entry Fee	Other Fees	A Family Spends (entry only)	A Family Spends (including other facilities)	Per capita income of the State (2010-2011)	Per day per capita income (=PCI/365)	% of per day income of 4 persons, spending only for entry	% of per day income, spending including other facilities
12.	RSCTIRU	10	27	40	148	62912	173	6	22
13.	SSCPAT	10	19	40	116	20708	57	18	51
14.	KPSC	20	20	80	160	94680	260	8	16
15.	NBSC	10	24	40	136	48536	133	8	26
16.	GSC	10	30	40	160	168572	462	3	9
17.	BURSC	5	15	20	80	48536	133	4	16
18.	DSCDGA	10	31	40	164	48536	133	8	31
19.	DSCDKL	5	4	20	36	40412	111	5	9
20.	DSCGUL	10	25	40	140	60946	167	6	21
21.	DSCDHAR	3	13	12	64	75115	206	2	8
22.	DSCTIRU	10	25	40	140	72993	200	5	18
23.	DSCPURU	5	18	20	92	48536	133	4	18
24.	SCPB	10	25	40	140	76883	211	5	17
25.	APSC	10	5	40	60	55789	153	7	10
26.	NAGSC	10	0	40	40	52643	145	7	7
27.	SHISC	10	0	40	40	50427	139	8	8
28.	SIKSC	10	0	40	40	81159	223	5	5
29.	MANSC	5	0	20	20	29684	82	7	7
30.	SUKACK	10	70	40	320	44965	124	9	65
31.	**PGSC**	**75**	**220**	**300**	**1180**	**128634**	**353**	**22**	**84**
32.	TNSTC	20	30	80	200	72993	200	10	25
33.	BMPIL	10	0	40	40	34042	94	11	11
34.	RMNHBHO	0	0	0	0	32222	89	0	0
35.	RMNHBBSR	0	0	0	0	40412	111	0	0
36.	PSPBBSR	25	30	100	220	40412	111	23	50
37.	SCSOLA	10	30	40	160	83471	229	5	18
38.	MSPLA	16	0	64	64	48536	133	13	13
39.	GUWPLA	30	0	120	120	30569	84	36	36

Table 1

Spends only for entry (% of per day income of 4 persons)		
0-5%	12	
6-10%	14	
11-15%	5	
16-20%	2	Average spending for entry : 10.21% of pdpc
21-25%	5	
26-30%	0	
31-35%	0	Standard Deviation : 7.72% of pdpc
36-40%	1	

Table 1.1

Spending for availing other facilities (% of per day income of 4 persons)		
0-10%	9	
11-20%	9	
21-30%	8	
31-40%	3	
41-50%	2	
51-60%	2	Average Spending for availing all the facilities : 27.82% of pdpc
61-70%	1	
71-80%	1	Standard Deviation is: 23.68% of pdpc
81-90%	3	

Table 1.2

Propagation
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Sl. No.	Centre Name	Entry Fee	A Family Spends on Entry Only	Per capita income of the State (2010-2011)	Per day per capita income	% of per day income, spending only for entry
xx	xx	xx	Family = 2 adults + 2 children	(at current price)	PDPCI =PCI/365	xx
1.	BITM	40	160	48536	133	31
2.	NSCD	40	160	150653	413	10
3.	VITM	40	160	60946	167	24
4.	NSCM	40	160	83471	229	18
5.	SCTY	40	160	48536	133	31
6.	RSCL	20	80	26355	73	28
7.	RSCBBSR	20	80	40412	111	19
8.	RSCG	20	80	30569	84	24
9.	RSCNAG	20	80	83471	229	9
10.	RSCBHO	20	80	32222	89	23
11.	RSCCALI	20	80	71434	196	11
12.	RSCTIRU	20	80	62912	173	12
13.	SSCPAT	15	60	20708	57	27
14.	KPSC	15	60	94680	260	6
15.	NBSC	15	60	48536	133	12
16.	GSC	15	60	168572	462	4
17.	BURSC	10	40	48536	133	8
18.	DSCDGA	10	40	48536	133	8
19.	DSCDKL	10	40	40412	111	10
20.	DSCGUL	10	40	60946	167	6
21.	DSCDHAR	10	40	75115	206	5
22.	DSCTIRU	10	40	72993	200	5
23.	DSCPURU	10	40	48536	133	8

Table 1.3

Sl.No	Centre Name	Entry Fee (Students)	Other Fees (Students)	Total Fees
1.	BITM	7.00	36.00	43.00
2.	NSCD	15.00	10.00	25.00
3.	VITM	15.00	17.00	32.00
4.	NSCM	15.00	25.00	40.00
5.	SCTY	10.00	55.00	65.00
6.	RSCL	10.00	30.00	40.00
7.	RSCBBSR	5.00	9.00	14.00
8.	RSCG	10.00	25.00	35.00
9.	RSCNAG	5.00	25.00	30.00
10.	RSCBHO	5.00	07.00	12.00
11.	RSCCALI	5.00	20.00	25.00
12.	RSCTIRU	5.00	xx	

Table 1.4

Sl.No	Centre Name	Entry Fee (Students)	Other Fees (Students)	Total Fees
13.	SSCPAT	10.00	20.00	30.00
14.	KPSC	10.00	nn	xx
15.	NBSC	5.00	14.00	19.00
16.	GSC	2.00	13.00	15.00
17.	BURSC	2.00	26.00	28.00
18.	DSCDGA	2.00	4.00	6.00
19.	DSCDKL	5.00	15.00	20.00
20.	DSCGUL	1.00	nn	
21.	DSCDHAR	5.00	15.00	20.00
22.	DSCTIRU	2.00	12.00	14.00
23.	DSCPURU	5.00	20.00	25.00
24.	SCPB	5.00	00.00	05.00
25.	APSC	5.00	5.00	10.00
26.	NAGSC	5.00	0.00	05.00
27.	SHISC	5.00	0.00	05.00
28.	SIKSC	5.00	0.00	05.00
29.	MANSC	3.00	0.00	03.00
30.	SUKACK	5.00	35.00	40.00
31.	**PGSC**	50	175	225.00
32.	TNSTC	25.00	nn	
33.	BMPIL	05.00	0.00	05.00
34.	RMNHBHO	0.00	0.00	0.00
35.	RMNHBBSR	0.00	0.00	0.00
36.	PSPBBSR	15.00	20.00	40.00
37.	SCSOLA	5.00	15.00	20.00
38.	MSPLA	08.00	0.00	08.00
39.	GUWPLA	15.00	0.00	15.00

Table 1.4

Name	Type	Entry Fee	Per capita income of the State (2010-2011)	Per day per capita income	% of per day income, spending only for entry
ALIPORE ZOO	Zoo	20	48536	133	16
INDIAN MUSEUM	Art/Nat. Museum	10	48536	133	8
INOX MOVIES,KOL	Cinema Hall	150	48536	133	113

Table 1.5

i) Financial Impact by the means of Growth of Budget (expenditure) and Revenue

Growth of NCSM Budget (Expenditure)				
F-Y	Plan	Non Plan	Total	Growth %
2009-2010	2316.03	4352.35	6668.38	xx
2010-2011	2735.92	4306.27	7042.19	5.61
2011-2012	3211.58	4620.81	7832.39	11.23
2012-2013	3252.50	5342.35	8594.85	9.74
2013-2014	3068.33	5733.71	8802.04	2.42
Average Growth of Budget over a period of 5 years (F -Y)				-------- 6.34%

Table 2.1

Revenue Growth of NCSM		
F-Y	Revenue	Growth%
2009-2010	1036.80	xx
2010-2011	1280.44	23.5
2011-2012	1525.17	19.2
2012-2013	1676.28	10
2013-2014	1770.00	5.6
Average Revenue Growth of NCSM over a period of 5 years (F-Y) ------- 14.2%		

Table 2.2

From Table 2.1 and 2.2, it is discernible that while expenditure grew at a rate of 6.34% per year, the revenue has grown @ 14.2% per year over a period of 5 years from 2009-10 to 2013-14. A major growth in revenue can be seen during 2009-10 to 2011-12at 23.5% and 19.2% respectively. However, this growth is found to be marginal in the last two financial years. In fact, in 2013-14it grows only 5.6% as a sequel to certain economic factors, like inflation due to uncontrolled price rise of essential commodities, dipping FDI, widening fiscal deficit etc. affecting the country.

ii) Financial inclusion by the means of socio-economic impact study

Socio-economic impact includes programmes targeted to personal growth, community empowerment and programmes aimed at tackling unemployment of the local people etc. study of the local economic background and direct & indirect employment opportunities created by the Science Museums and Centres.

a) Programmes on 'Socio-economic Growth' in last five years

Nature of Programme	No. of Science Centre
Personal Growth	17
Community empowerment	19
Tackling Unemployment	10

Table 3.1

From the Table 3.1, we can say that about 50% of the surveyed Indian science centres have conducted programmes on personal growth and community empowerment. But when it comes to programmes envisaged for tackling unemployment, this percentage substantially drops;only 25% of the centres/museums conducted such programmes in the last 5 years.

Sl. No.	Name of the Centre	Detail of the Programme on Tackling Unemployment
01.	Birla Industrial & Technological Museum, Kolkata	• Hardware & Networking Course for Unemployed Youths • Hydroponics workshop for housewives and entrepreneurs • Origami - home decoration with paper made products • Empowerment programmes with prisoners
02.	Visvesvaraya Industrial and Technological Museum, Bangaluru	• 'Channapatna Toy making Training program' • Batik and block printing training program for youth. • Screen printing program for youth. • Household cleaning material preparation.
03.	Regional Science Centre, Tirupati	• Entrepreneurship programme for women in Agr iculture, exclusively for girls. • Programmes on Floral Decoration, Kitchen Garden and Vermi Culture on various occasions in the past 5 years.
04.	District Science Centre, Dharampur	• Meson training programme for school dropouts . • Soft toys making workshop for housewives . • Computer training programmes . • Jardosi training programme for housewives .
05.	District Science Centre, Tirunelvelli	• Special 'Awareness Programme' for the rural youth in collaboration with Nehru Yuva Kendra, Tirunelve lli on various Technical Self Employment Schemes for the rural youth. • An interactive student motivation programme, "Passionate Yourself" on "Goal Setting".
06.	Science Centre, Port Blair	1. "Meet the Pilot", Workshop on Article Writing with special reference to Science Articles 2. Workshop on making of Films specially designed to tackle the unemployment problems.
07.	Sikkim Science Centre	

	Training	Collaborating Institution	Beneficiary number
a)	Training on Agro Technique, Macro propagation, Seasoning & Value Addition on Bambo	(i) Rain Forest Research Institute, Jorhat, Assam (ii) Cane & Bamboo Technology Centre, Guwahati	80 (Capacity Building Programme for progressive farmers)
b)	Capacity Building & Training Programme on Food/ Vegetables & Fruit Processing Central Food Technology Research Institute, Mysore	Central Food Technology Research Institute, Mysore	80 (Capacity building programme for rural women)

Table 3.1.1

Sl. No.	Name of the Centre	Detail of the Programme on Tackling Unemployment			
		c)	Capacity Building Programme on Agrotechnique & Value Addition of Medicinal & Aromatic Plants	Central Institute of Medicinal & Aromatic Plant (CIMAP) Lucknow Institute of Himalayan Bio Resources & Technology, Palampur, Himachal Pradesh	40 (Capacity building programme for progressive farmers and unemployed youth & entrepreneurs)
08.	Tamilnadu Science and Technology Centre	• Career counselling programmes are being organized periodically throughout the State. • Training Programmes on Java and Open source software su ch as Linux and other software to make the engineering graduates employable.			
09.	RMNH, Bhubaneswar	• In-house and outreach programmes include empowerment programmes for differently abled peoples like physically challenged, mentally challenged, hearing impaired and visually challenged through creative activities like painting, clay modelling, touch, feel and learn, singing activities etc. and for fisherman community.			
10.	Solapur Science Centre	• Women self-help group targeted programme sto provide general information about computers and internet, how to book and take a gas connection and many online related facilities ,who are otherwise not aware of these.They are expected to use such that may fetch employment/dividends out of this exposure.			

Table 3.1.1

On scrutiny of the Table 3.1.1, which elaborated on the programmes aimed at tackling the problems of unemployment, it may be stated that Indian Science Centres/Museums do not have any common framework for such programmes. However, they rely on local scenario for framing such programmes. For example, DSC, Dharampur, located at one of the Asia's largest tribal belts, designs such programmes in a very interesting manner. You will find that the Centre conducts 'Meson training' programme for 'school drop-outs', arranges 'Jardosi' (an internationally popular designer saree produced locally) and Soft-toy-making workshops for housewives as well as conducts Computer training programmes.

Actual financial impacts of these programmes are yet to be assessed among the local population. But apart from the programmes on 'tackling unemployment' (Table 3.1.1), if we go through the training curriculum of these centres individually, we can conclude that these are aimed at personal growth and community empowerment for grooming people to become successful in professional career.

b) Location & Local Economic Background

When studying the location and local economic background (as reported by the Heads of respective institutions) of the Indian Science Museumsand Centres, it is found that majority of them are city or town centric. Even some of the rural science centres are situated at tourist places (Table 3.2.1) and 29 out of 38 centres are situated in mixed economy zones (Table 3.2.2).

Metro City	6
City (State Capital)	9
City/Urban	4
Suburban	9
Rural	3
Tourist Place	5

Table 3.2.1

Local Economy

Agrarian	6
Mixed	29
Business	2
Others	1

Table 3.2.2

From Table 3.2.1 and Table 3.2.2, we may conclude that Indian Science Centre need to have more rural penetration. It may be in the form of rural extension wing. Primarily this may be done for a certain period of time, as we would do with MSE programmes.

Conclusion

The impact studies on economic issues for the Science Museum sector, that too in a pluralistic republic like India that thrives on diversity at all fronts, is, in fact, a mammoth task in terms of consideration and consolidation of specific local economic issues of each establishment, choice of appropriate econometric analysis to be put on board for interpreting data, and on the top of all, time and costs.

Studies based on monoculture of societal settings abroad should not be adopted in a diverse country like India, even though it is an undeniable fact that each set-up is an economic unit unto itself with input-output components having a moderate influence of price elasticity of demand in diverse scenario, as discussed earlier.

The findings of this study document the broad-based economic inclusiveness of Indian Science Museums and Centres in the current context. However, the multiplier effects of this impact on the local, zonal, regional and national economy may be explored in proper perspectives in the next phase. Even though the study is based primarily on entry fees and fees for visiting other facilities, it is important to mention here that there are globally large differences of opinions amongst museums in the way they set the entrance fees. There are raging debates whether or not to charge (O'Hagan, 1995; Heilbrun and Gray, 2001; Bailey and Falconer, 1998). Still today, most of the British museums don't charge their visitors. Even in the United States some national museums do not levy an explicit entrance fee. Some positive externalities connected with this sector, as dwelled upon in this article in the preceding sections, may put forward the arguments in favour of free admission of student community which forms the major chunk of clientele base of Indian Science Museums and Centres.

Finally it won't be out of place to mention certain words of caution in respect of impact studies, especially those dealing with economic aspects which often tend to focus on the wrong issues. It needs to be kept in mind that the raison d'être of museums, including the Science Museums and Centres, is to produce the unique service of providing a certain type of cultural experience to its visitors as well as providing the benefits to all other stakeholders as referred to the above. After all, a museum's primary task, as a component of creative industry, is not to essentially support the economy per se; there are much better avenues to achieve that goal.

Acknowledgement

The author would like to acknowledge the co-operation of all the heads of the Science Museums & Science Centres of this country and the members of their team, and other participating institutions during the year 2013 by way of responding to the questionnaire and facilitating other surveys as a part of this article. Thankful appreciation is particularly extended to Shri Rajarshi Bhattacharya of Central Research & Training Laboratory for his patience and support with analysis of the small statistical base of this qualitative research report, without which this study could not been carried out.

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Annexure A

Name of the Participating Indian Science Centres, Museums & Planetariums

APSC	-	Arunachal Pradesh Science Centre
BMPIL	-	Birla Museum, Pilani
BITM	-	Birla Industrial & Technological Museum
BURSC	-	Science Centre, Burdwan
DSCDGA	-	Digha Science Centre & National Science Camp
DSCDHAR	-	District Science Centre, Dharampur
DSCDKL	-	Dhenkanal Science Centre
DSCGUL	-	District Science Centre, Gulbarga
MANSC	-	Manipur Science Centre (Department of Science & Technology, Govt. of Manipur)
DSCPURU	-	District Science Centre, Purulia
DSCTIRU	-	District Science Centre, Tirunelveli
GUWPLA	-	Guwahati Planetarium
GSC	-	Goa Science Centre
KPSC	-	Kurukshetra Panorama & Science Centre
MSPSSC	-	Meghnad Saha Planetarium & Space Science Centre
NSCM	-	Nehru Science Centre, Mumbai
NAGSC	-	Nagaland Science Centre
NBSC	-	North Bengal Science Centre
NSCD	-	National Science Centre, Delhi
PSPBBSR	-	Pathani Samanta Planetarium, Bhubaneswar
PGSC	-	Pushpa Gujral Science City
RMNHBBSR	-	Regional Museum of Natural History, Bhubaneswar
RMNHBHO	-	Regional Museum of Natural History, Bhopal
RSCBHO	-	Regional Science Centre, Bhopal
RSCBBSR	-	Regional Science Centre, Bhubaneswar
RSCCALI	-	Regional Science Centre & Planetarium, Calicut
RSCG	-	Regional Science Centre, Guwahati
RSCL	-	Regional Science City, Lucknow
RSCNAG	-	Raman Science Centre & Planetarium, Nagpur
RSCT	-	Regional Science Centre, Tirupati
SCPB	-	Science Centre, Port Blair
SSC	-	Sikkim Science Centre
SSCP	-	Shrikrishna Science Centre, Patna
SCTY	-	Science City, Kolkata
SHISC	-	Shillong Science Centre, Meghalaya
SCSOLA	-	Sholapur Science Centre
SUKACK	-	Sukanta Academy, Agartala
TNSTC	-	Tamilnadu Science & Technology Centre
VITM	-	Visvesvaraya Industrial & Technological Museum

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Questionnaire Annexure – B

Institutional Information

Name:

Address:

State: Country: PIN/ZIP:

Name of the Head of the Institute/ CEO :

Position:

Phone: Email:

1. Please tick which ONE of the following that BEST describes your organization:
   a. Science Center [ ]
   b. Science Museum [ ]
   c. Planetarium [ ]
   d. Natural History Museum [ ]
   e. Others [ ] Please specify:

2. In which year your institution was first opened regularly to the public? [ ]

3. Does your institution charge a general admission fee?
   1. Yes [ ]
   2. No [ ]

4. How much floor space in your institution is for public use?
   (Exclude areas such as offices, workshops, storage space etc.)
   Indoor : _____ square metres
   Outdoor : _____ square metres
   Note: (1000 sq feet = 93 sq metres, if your institution has more than one building / site, please show combined floor area)
   Number of days in a year that your institute remains open:

Area of Your Centre

5. **How do you characterize the area of your centre:** Is it situated in a cosmopolitan city area or in a tourist spot or in a suburban or rural area?

6. **What is your observation on the financial and social condition of the local population of the surrounding area?** (e.g. whether agrarian economy, surrounded by any ethnic community)

Financial (Please tick)		Social Resolution	
1) Agrarian Economy	[ ]	1) Major Linguist group:	
2) Business driven economy	[ ]	2) Ethnic Group(s) (if any):	
3) Mixed Economy	[ ]	3) Mixed population group:	
4) Others (specify)	[ ]	4) Others (specify) :	

Your Fee structure

7. **What is your entry-gate fee?**

8. **What are the other facilities with additional fees?** *(e.g – Taramandal (planetarium), Science Demonstration, 3D Theatre etc.)*

9. **Do you have any other avenue of income?** *(e.g – Renting of Auditorium, rentable picnic area in garden etc.)*

(Please give detail for general public, organized student group separately)

Programmes

10. **Have you ever conducted any programme for Personal Growth and Development in last five years? Please give a brief description.**
(The Programmes are supposed to make significant differences in the lives of individuals at risk of financial, intellectual and social disadvantages. Expected outcomes include enhanced self-esteem, confidence and creativity, which, in turn, have helped people develop more active, fulfilled and social lives)
11. **Have you ever conducted any programme for community empowerment in last five years? Give a brief account.**
12. **Have you ever conducted any programme directed towards tackling the problem of unemployment? Please elaborate.**

Publicity

13. **What is your publicity budget?**

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