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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	CONTRIBUTION OF RURAL NON-FARM INCOME TO TOTAL HOUSEHOLD INCOME: THE CASE OF TIGRAY, NORTHERN ETHIOPIA <i>ZAID NEGASH</i>	1
2.	COMPETITIVENESS CONDITION, MARKET POWER AND DRIVERS OF COMPETITION OF BANKS IN ETHIOPIA <i>MISRAKU MOLLA AYALEW & Dr. ZHANG XIANZHI</i>	6
3.	COMPREHENSIVE PROBLEMS OF HDFC AND SBI HOME LOAN TAKERS - A STUDY IN TELANGANA STATE <i>RAMESH VANKADOTH</i>	15
4.	THE IMPACT OF VARIOUS ASPECTS OF STRESS INFLUENCING FACTORS OF PRIVATE BUS DRIVERS WITH SPECIAL REFERENCE TO TRICHY DISTRICT <i>Dr. P. DEVI</i>	18
5.	IMPACT OF FOREIGN DIRECT INVESTMENT (FDI) ON INDIAN ECONOMY <i>SUBHASH CHANDRA SONI</i>	21
6.	AN ANALYTICAL STUDY ON LONG TERM PERFORMANCE OF INITIAL PUBLIC OFFERINGS IN INDIA <i>NARENDRASINH B. RAJ</i>	26
7.	WOMEN ENTREPRENEURS IN INDIA: ISSUES AND POLICIES <i>Dr. ARISHA FATIMA RIZVI & HASSAN MD. JILLUN NOOR</i>	31
8.	A STUDY ON WORKING STRATEGY OF SELF HELP GROUPS <i>M.NAGALAKSHMI</i>	36
9.	ANALYSIS OF NON-INTEREST INCOME AN OPPORTUNITY & SUCCESS OF BANKS IN INDIA <i>MEENA KUMARI</i>	40
10.	WINNING THE PLASTIC BOTTLE BATTLE (A CASE STUDY OF THE PLASTIC WASTE DISPOSAL MANAGEMENT AT THE MYSORE CHAMARJENDRA ZOOLOGICAL GARDENS, MYSORE) <i>Dr. SWAROOP SIMHA</i>	43
	REQUEST FOR FEEDBACK & DISCLAIMER	50

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- Garg, Bhavet (2011): Towards a New Gas Policy, Political Weekly, Viewed on January 01, 2012 <http://epw.in/user/viewabstract.jsp>

**WINNING THE PLASTIC BOTTLE BATTLE
(A CASE STUDY OF THE PLASTIC WASTE DISPOSAL MANAGEMENT AT THE MYSORE CHAMARJENDRA
ZOOLOGICAL GARDENS, MYSORE)**

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ABSTRACT

Purpose – The purpose of this study is to show the use of an innovative way of handling plastic waste.

The case is about a very positive waste management approach controlling the waste in the form of plastics and their disposal managed by one of the oldest and most popular Zoos in India and Asia, namely The Mysore Chamarjendra Zoological Gardens.

Design/Methodology/Approach – Interviews and Observation methods has been the basis for collecting information and data.

The case has been put together studying the ticketing software reports and how it has been extended to generate reports to manage the plastic disposal management.

Findings – The case studies the information about waste management in the city and examines its significance and contribution of the Mysore Zoo in keeping its commitment to disposal of the plastic waste.

Practical implications – The case study has practical implications to the ecology, environmental management, IT management, consumer management and ultimately a good services marketing approach

Originality/Value –The case study provides insights into the relationship between waste generation and its successful management and also the roles played by authorities and the visitors to the zoo, making it a good experience overall. It is an attempt of the Mysore Zoo to be a role model to all other tourist destinations and sights. Indeed, it has had a huge impact with its contribution towards cleaner and greener India.

KEYWORDS

waste management, waste disposal, consumer attitude and perception, technology to aid.

CASE STUDY

Hari and his family stood in the "Que" at the Mysore Zoo entrance to buy tickets for a family of four, Hari a seasoned traveler was well equipped with most things with special emphasis to equipping each of the family member with a bottle of water.

At the counter, the friendly ticketing zoo agent smiled and stated, "that would be 40 Rupees Sir for the water bottles." Hari was a little taken aback, he retorted, "These are our water bottles procured from an outside store. So why would I need to pay 40 rupees?"

The Zoo ticketing Agent very patiently replied. It appears Sir, you have not noticed the sign board that says we collect 10 rupees for every plastic bottle carried inside the zoo, by fixing a sticker on the bottle, we scan the sticker to identify its entry in our system, and the same bottle on return would be reimbursed with the money collected from you."

Hari was now placated and was keen understand as to why such a move was taken up by the Zoo authorities...

PLASTIC BOTTLE MENACE

The Mysore Chamarajendra Zoological Gardens is Asia's top Zoo and had been long fighting the battle of plastic waste disposal accumulated due to the huge number of visitors visiting every day and dumping plastic garbage all around the 125 yr old garden.

The zoo was incurring huge expenses in disposing the waste and for no avail; clearing waste left behind indiscriminately was also a pain for the authorities.

There were also cases of plastic bottles, which were being used to chuck them at animals by unkind human beings. Food carried in packages were also given to animals which was a sure form of harm to the fauna and led to serious health consequences to many a species and their dwindling number.

MANY FRUITS WITH ONE STONE

A solution had to be worked out to keep the zoo plastic free zone and achieve more benefits from such a move. Therefore, an initiative was mooted by the then Executive Director of Mysore Zoo, B.P. Ravi. Way back in 2011-2012, The objective was clearly to make the Zoo totally "Plastic Free" and nothing less.

It started in a small way and small number stickers stuck to bottles after collecting a fee. This later paved way for a more hi tech initiative in terms of Bar coding the stickers on the bottle first and later went on to include every item packaged in plastic, be it chocolate or chips wrappers. All in all, it was a movement to discourage any type of food and water being brought into zoo in plastic containers. Thereby making the zoo free from plastic waste and ensuring that the animals are free from abuse from the visitors.

PHOTO 1



PHOTO 2



PHOTO 3



THE TECHNOLOGY BEHIND BAR CODE SCANNING

The software behind the bar code technology, helps the zoo to tag and trace at the exit point, ensuring that a visitor is cleared of paying for the bottle. This also takes care of any duplication or reentry of any sort at the exit point by proper sequencing in the system making it fool proof.

The Mysore Zoo has been very competently supported by Mysore based International Firm known as Nexshore, who have been working as consultative partners over the years and integrating all the zoo's software needs specially in the areas of e-ticketing and report generation and most recently in bringing in Bar code sticker scanning for plastic bottles and any other form of plastic containers wrappers termed as waste.

BENEFITS ACHIEVED FROM THIS INITIATIVE

The bottle sticker initiative has been successful in eliminating plastic bottle accumulation in the zoo. The stickers on the bottles ensure people to behave in a responsible manner, by carrying the bottle out of the zoo after being returned of the deposit at the entrance gate. In fact, the luggage room has come as a boon to the visitors to not carry plastic bags and containers inside, instead can stow it there comfortably till they return.

The zoo was able to plough back what was earned in the of penalty after all those visitors leaving behind bottles and not claiming for it.

It has also been a source of motivation for the zoo staff to pick up any isolated bottle thrown away in the bins or grounds to return it at the counter and be rewarded for the move. This has been a break from the past when plastic bottle waste was viewed as not their job to collect for disposal.

Now that the plastic is all collected and centralized at the entrance, the Plastic bottle is then disposed for recycling by calling for tender to vendors who are involved in plastic recycling. The huge quantity of plastic waste makes it a very attractive raw material for many a manufacturer in the plastic industry.

The Zoo being a very popular tourist attraction in Mysore has a constant stream of visitors all through the year, however only two months in a year it is considered lean, the highest visitation is seen to be during school holidays in Summer and Christmas and during the famous Mysore Dasara festival of 9 days

GARBAGE AND WASTE MANAGEMENT IN MYSORE CITY – THE BIG PICTURE

Mysore is the second largest city in Karnataka, In India, after Bangalore. Mysore is spread over an area of about 128 sq. km with the growing population (0.65 millions in 1991 to 0.76 millions in 2001) at faster rate due to influx of many service industry activities, the generation of municipal waste both garbage and sewage has been on the rise. Anthropogenic activities in society generate large quantities of wastes posing a problem for their disposal. Improper disposal leads to spreading of diseases and unhygienic condition besides spoiling the aesthetics. In India, every year 30.3 million tons of Municipal solid waste is generated. This equate to about 350 gm of waste per person on average (Mazumdar, 1994)

(https://www.researchgate.net/publication/228852479_Studies_on_Municipal_Solid_Waste_Management_in_Mysore_City-A_case_study [accessed Jun 20, 2017]).

As of now, the city is generating 402 tonnes of garbage a day of which only fifty percent is processed daily while the rest is dumped.

The missing link was segregation of waste at source, which the MCC is now addressing even as it start works to build the new plants. The MCC has procured dustbins under the integrated municipal solid waste management plan at a cost of Rs. 2.95 crore.

The local body, which has set up five zero waste management plants across the city's five among the nine zones, will ship the biodegradable waste to these mini units and process them producing manure. The local body has now advised the households that they need to separate the solid waste, mainly plastic, in a separate bin, which will be collected once in a week. This waste is planned to be used at a plant it is planning to build to convert it into diesel.

(<http://timesofindia.indiatimes.com/city/mysuru/Mysore-City-Corporation-launches-drive-for-efficient-solid-waste-management/articleshow/>)

METRICS OF THE ZOO PLASTIC WASTE ACCUMULATED

The Mysore Zoo on an average accumulates and collects, in a month 20,000. Units of plastic bottle waste. This is a significant proportion in terms of the overall plastic waste recorded in the Mysore City. This also lays emphasis on how waste can be managed in most of the sites termed as Tourist attractions in Mysore city. Given below data* related to Zoo recorded real time regarding the walk in of Visitors (Adult and Children) and the Plastic bottle scanning operations since April 2017.

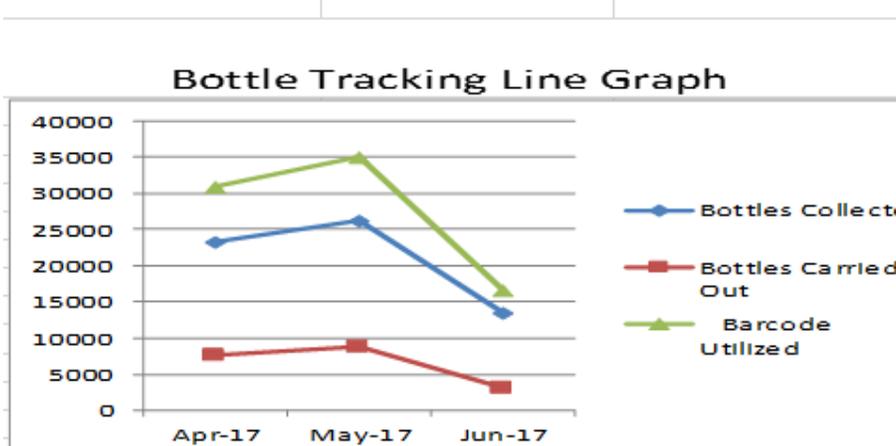
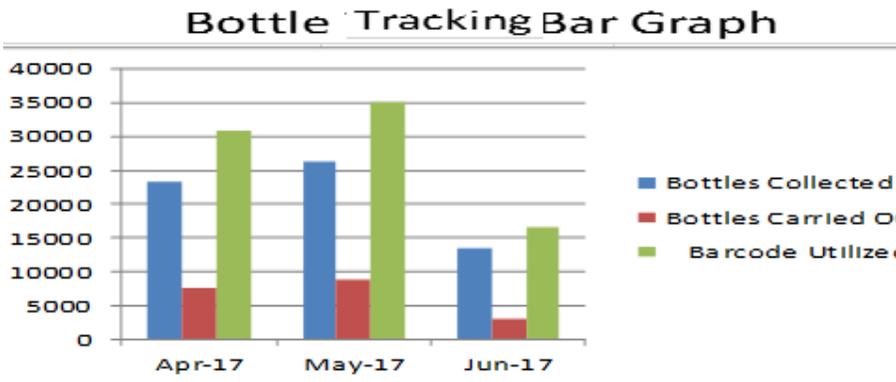
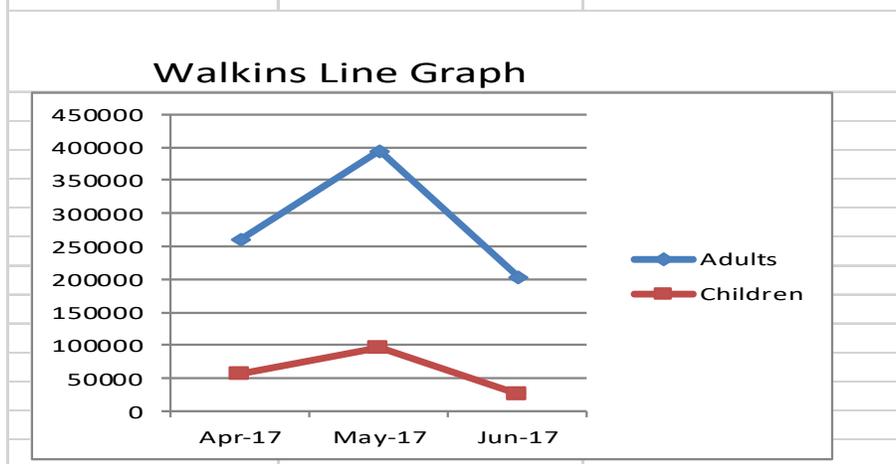
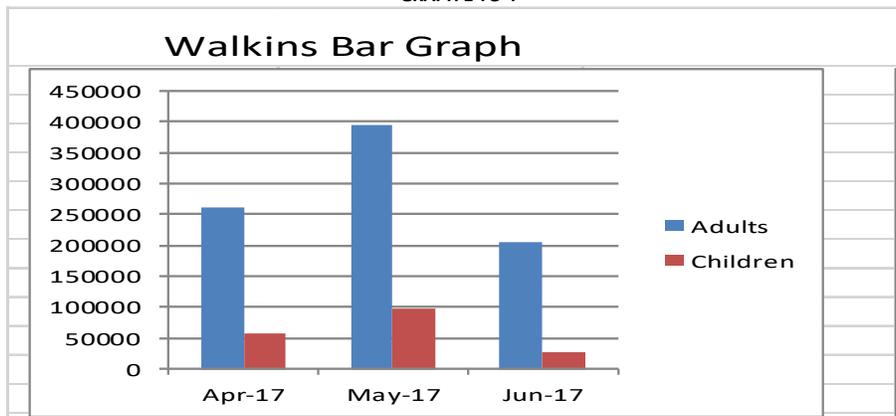
TABLE 1: ZOO MONTH WISE WALK INS DETAILS FOR 2016-17

Month/Year	Adults	Children
4/2016	11101	2427
5/2016	367497	88364
6/2016	135262	16436
7/2016	185957	21707
8/2016	164547	16292
9/2016	109195	11039
10/2016	274480	48045
11/2016	145936	18284
12/2016	228569	34101
1/2017	34038	4881
2/2017	125190	10947
3/2017	119323	10243
Total	1901095	282766

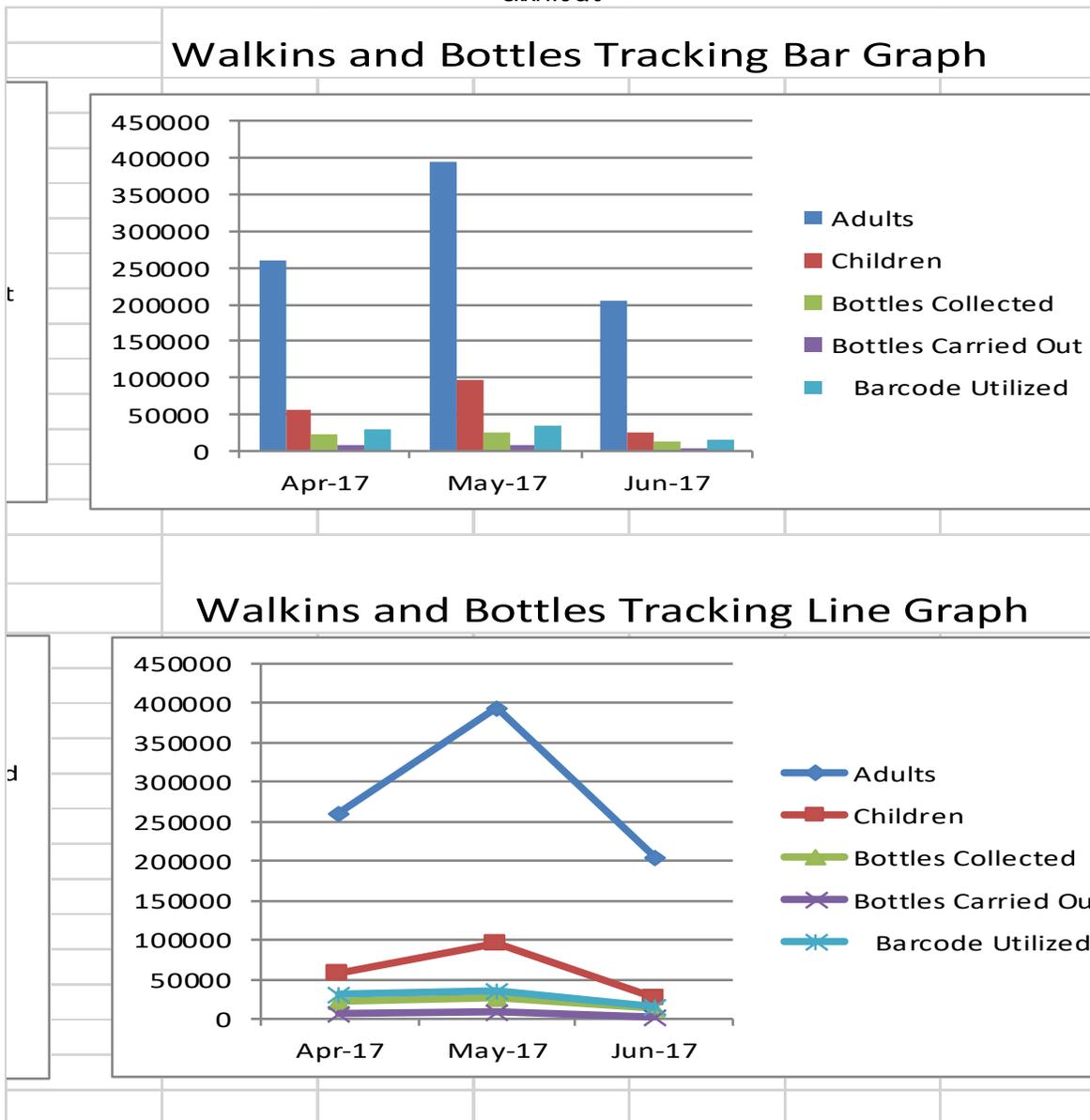
Zoo Monthwise walkins and bottles tracking details [Month :April - June]					
Month/Year	Walkins Details		Bottle Tracking Details		
	Adults	Children	Bottles Collected	Bottles Carried Out	Barcode Utilized
Apr-17	260598	57402	23278	7590	30868
May-17	394107	96869	26256	8819	35075
Jun-17	204443	26557	13593	3084	16677
Total	859148	180828	63127	19493	82620
Walkins Details					
Total Adults	859148				
Total Children	180828				

WALKINS DETAILS	
Adults	1901095
Children	282766

GRAPH 1 TO 4



GRAPH 5 & 6



The number of visitors to the zoo visiting the zoo carrying bottles and affixing the barcodes for scanning is an key indicator of the bottle waste generated in the zoo.

The number of adults to children visitors is another aspect which can help in determining the source of bottles carried into and out of the zoo.

Utilized barcode – barcode scanned and collected at the exit point = barcode carried out.

This equation gives rise to many possibilities

There are 4 possibilities of events happening in the management of bottle waste.

This is based on the events with the visitor’s actions.

X1- visitors complete the tour and scan the plastic bottle at the exit and collect the refund.

X2 – visitors forget to scan and leave with the bottle possibly with water in it.

X3 – Visitors leave the bottle behind on the tour in bins and is collected later by staff and returned at exit point.

X4- Visitors scan the bottle and carry the bottle outside possibly because water.

In the Month – Apr-17

Bottles Carried Out = 7590;

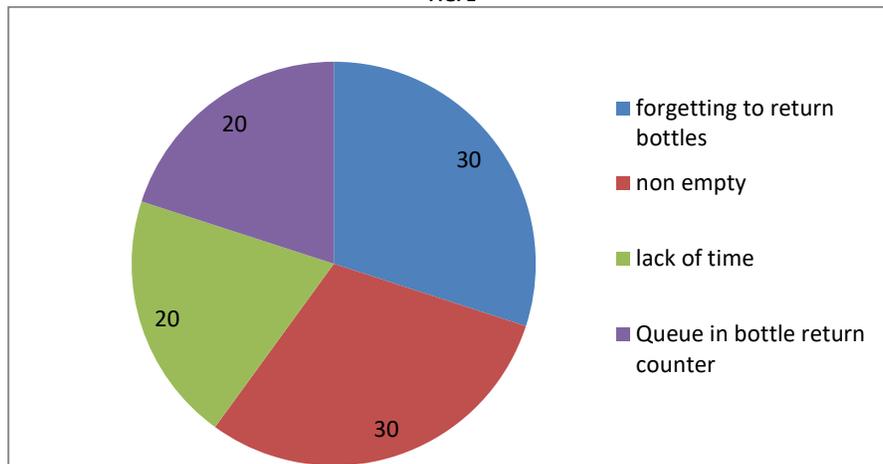
Total No of Customers who carried it out by forgetting to return bottles = $(7590 / 100) * 30 = 2277$;

Total No of Customers who carried it out as it was not empty = $(7590 / 100) * 30 = 2277$

Total No of Customers who carried it due to paucity of time = $(7590 / 100) * 20 = 1518$

Total No of Customers who returned it on their way out by EXIT return counter = $(7590 / 100) * 20 = 1518$.

FIG. 1



THE HURDLES AND STUMBLING BLOCKS TO THIS INITIATIVE

The toughest hurdle faced, was the very idea of introducing the need of “Plastic free” concept in the zoo, There was a big block in the form of educating the people about why the money was collected.

The zoo has visitors pan country pan nations, which meant issues related to Literacy, Language, Social Class and Awareness levels related ecology and environment. It has taken great patience and understanding for the zoo staff specially the security men and women at the entrance manning counters and entry points to explain and convince the people of the worthiness of such an initiative for all.

Operational difficulties were also faced while introducing the bar code stickers, the stickers had to be the right size and stick able on the water bottle and the ink on the codes needed to be visible and readable

People walk around the park with plastic bottles in their hands covering the stickers with their fingers, this would lead to erasing of the bar lines on the stickers because of sweat and moisture, they would then become unreadable which in turn, create serious confusion at the exit point leading to a need for stringent but peaceful crowd management.

Some thought was given to solve the problem of condensation of water leading to ink being erased and making it unreadable. PVC stickers which not only stick well but which come with barcodes which are indelible was introduced, even though the cost of stickers were higher than paper stickers, the Mysore Zoo felt committed to the cause and considered it worthwhile specially during summers. It is now decided they will use a combination of paper and PVC stickers depending on the season very diligently.

CONTRIBUTION TO THE “SWATCH BHARATH”

The Mysore Zoo has been in the forefront of the new wave taken over India called the “Swatch Bharath” meaning “Clean India”. The Mysore Zoo’s contribution was another factor for putting Mysore on top of the list of cities in India as the “Cleanest city”.

The concept of “Go Green” by Mysore Zoo, has been the first of its kind amongst the Zoo’s in India. It is a small move towards a larger initiative of making a small part of the world have lessor Carbon footprint and commit a better environment for the future generations to come.

VISITOR PERCEPTION AND ACCEPTANCE

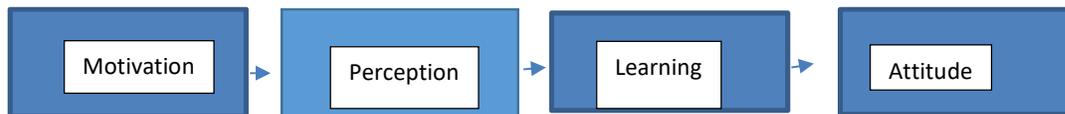
The visitors visiting the Zoo, have now understood the motive behind this initiative to make Mysore Zoo plastic free and have accepted it whole heartedly.

Perception and Learning has played a very important role in changing behavior of the zoo visitors.

There is no universally accepted Learning theory, However one with direct application to a strategy is stimulus response theory. Learning occurs to a person (1) responds to some stimulus by behaving in a particular way and (2) is rewarded for a correct response or penalized for an incorrect one. When the same correct response is repeated in reaction to same stimulus, a behavior pattern, or learning is established.

From the Zoo’s perspective, learning can become desirable or undesirable; once a behavior pattern has been established it becomes a habit and replaces conscious, willful behavior. This leads to attitude formation. Attitudes are formed and learned when visitors to zoo interact with social groups and this is important for zoo to convince people of the cause and make them to result favorably. If the zoo had failed to convince people to control their solid waste disposal initiative, society suffers.

STAGES IN VISITOR BEHAVIOR AND ACCEPTANCE OF THE CONCEPT



The marketing of zoo to the Visitors comes under the classification of cultural services marketing and Zoos are generally known for being a not for profit organizations which effectively means its growth and continued existence depend on generating revenue more than its costs. However, Profit as a motive is only secondary to N-F-P’s primary objective.

Cause related Marketing by The Mysore Zoo, reflects adoption of the societal marketing concept. From one point of view, these changes are true. The Zoo may totally satisfy its visitors and do very well economically, while adversely affecting the society in the process by its plastic waste pollution, but by taking up the cause of freeing zoo from plastic waste and marketing this idea efficiently shows its breadth and commitment dimension aspect of marketing the Zoo.

CONCLUSION

Since the early 1990ies, a big effort has been made to recycle plastics and integrate the concept of sustainable development in various fields of the economy. The current state of plastics recycling still suffers from major drawbacks from the economic and the ecological point of view. Firstly, it is still very expensive. For this reason, up to now large amounts of post-consumer plastics are deposited in landfills. As a further problem, mechanical recycling in the past has in some cases led to low-value products which are difficult to market and the ecological benefits of which are sometimes dubious.

In the words of Ravishanker, A very progressive minded and dynamic current Executive Director, of the Mysore Zoo "It's not about technology available or its use alone in disposal of waste, It has to do with attitude about the process of disposal and its management. Plastics are a boon and a bane; all waste is generated by us in the name of development, it is important to develop sustainable solutions for this plastic menace. Mysore zoo being the oldest in the country and popular too is proud have worked around this problem, by adopting Zero Waste Management policy, we recycle biodegradable solid waste into manure, harvest and recycle rainwater, collect plastic bottles and recycle it. Our Zoo is indeed a successful picture of aesthetic and economic role model. If we can do it successfully, why not others?"

He went on to add, "We are ready to share our ideas and collaborate on more innovative ideas for the future, after all, It most certainly calls for a larger role by the citizens and various authorities to sustain the initiatives, which will make the world become greener, cleaner and a healthier environment".

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