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Marketing of Bio-Toilets: Opportunities and Challenges

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Abstract:

As per the 12th five year plan, 50 percent of the villages must attain ODF (open defecation free) status by 2017 and 100 percentage by 2022. Unhygienic practice often leads to spreading of infectious diseases, and increases illness and mortality among the most vulnerable group i.e., children. Bio-toilets, which are easy to install and cost effective, and offer environmental friendly solution for sustainable human excreta management. And improving sanitation condition of the state.

Keywords: component; Bio-Toilet; Sanitation; Compost Marketing; open defecation; Green Product

1. Introduction

India is a land of diversity where one can witness space rockets carrying communication satellites into space and at the same time manual cleaning of human excreta by scavengers. According to the data shared by NSSO (National Sample Survey Office) in December 2013, 59.4 percentage of rural India defecate in the open. As per the 12th five year plan, 50 percent of the villages must attain ODF (open defecation free) status by 2017 and 100 percentage by 2022. But, this objective seems quite difficult to achieve in coming 8 years, because most of the villages of India are already facing serious health problems due to piles of excreta. Talking specifically about the condition of villages in Jharkhand, people use polythene sheets strung on four bamboo sticks as cover to defecate. From a survey conducted by MDWS (Ministry Of Drinking Water and Sanitation), only 40 percent homes in rural India have toilets while the rest of the population is forced to choose open defecation. This unhygienic practice often leads to spreading of infectious diseases, and increases illness and mortality among the most vulnerable group i.e., children.

Still, 113 million rural households are living without toilets. To meet this demand, India needs to construct 15.3 million toilets per year. But, the current rate at which the toilets are getting constructed is only 4 million per year. It means that total sanitation will get over by 2044 i.e., 20 years more than deadline. So, it is clearly visible that there is a huge requirement of toilets in the country which cannot be fulfilled by just current types of toilets which covers pour-flush, water closet (36.4 %), and pit latrine (9.4%) toilets and others (1.1 %) as per 2011 census of India.

Here comes the role of bio-toilets, which are easy to install and cost effective, and offer environmental friendly solution for sustainable human excreta management. Bio-toilets not only perform the general function of a toilet, but also convert human excreta into compost which can be used as organic fertilizer. This compost is found rich in Nitrogen (N), Phosphorus (P) And Potassium (K), and acts as a soil conditioner. A bio-toilet mainly consists of a toilet bowl, composting reactor, ventilation, and mixing mechanism (Figure-I). In the bio-toilet, faeces-urine is mixed with sawdust in a reactor chamber and this mixture is decomposed by aerobic bacteria resulting in formation of carbon dioxide (CO₂) and water (H₂O). The water is evaporated by the chemical heat which releases in the process decomposition of organic materials. Meanwhile, mineralized products of organic waste, such as Nitrogen (N), Phosphorus (P) And Potassium (K) remained in the saw dust. After the bio-toilet is used for 6 months, the residual sawdust is harvested and can be used for organic farming and biogas generation.

According to Union Urban Development Ministry, Maharashtra despite of being the wealthiest state of India, none of its city comes among top 10 in National City Rating under the ambitious national urban sanitation policy. From the facts revealed in the economic survey for 2012-13, staggering 46.9% households in Maharashtra do not have toilet facility. Sanitation facilities are lacking in 62% of rural households and about 34% household members are resorted to open defecation. There is need to formulate a policy for improvement of sanitation facilities in Maharashtra and implementing bio-toilet facility can improve sanitation condition of the state.

Till date, very few players exist who are selling this product in the Nagpur region (Appendix A) and a huge opportunity lies for selling bio-toilet to gram panchayats, rural governing bodies and state government in rural areas.

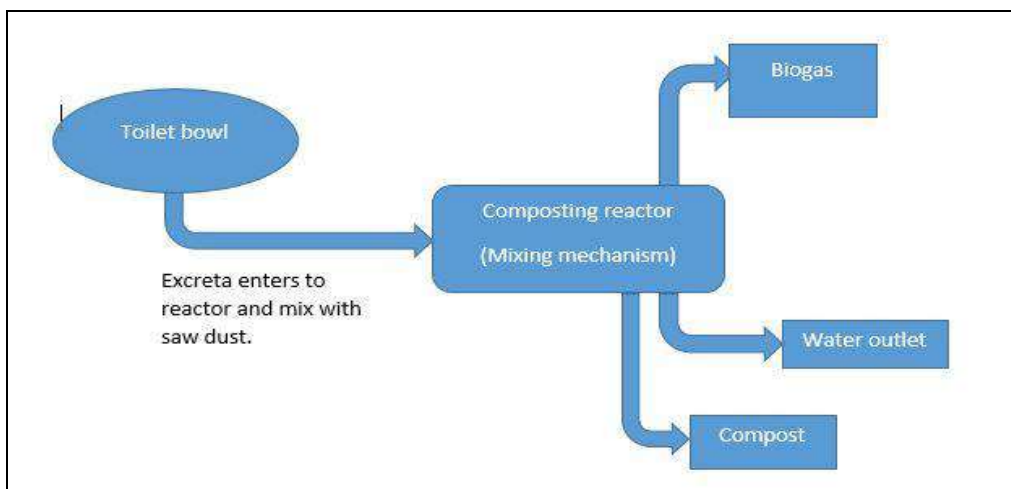


Figure 1: Components and Operation of Bio-Toilet

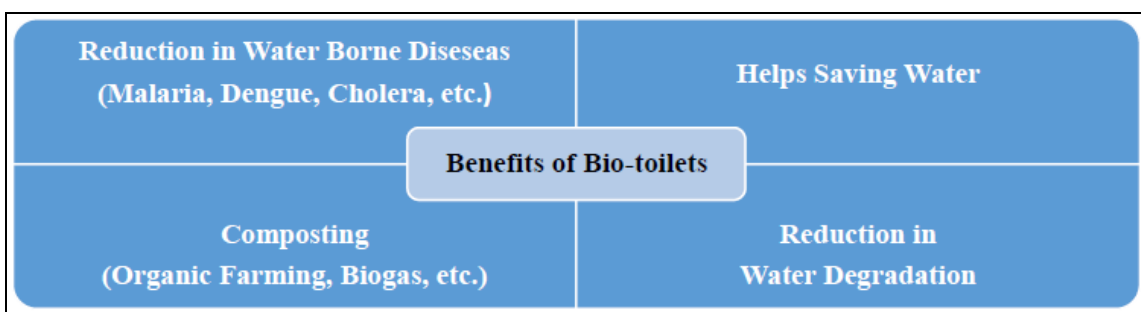


Figure 2: Benefits of installing Bio-Toilet



Figure 3: Marketing Strategy for Bio-Toilet

2. Literature Review

Literature suggests that there is strong need to do marketing of bio-toilets. McCarthy proposed marketing mix approach to target the customers which are generally known as the 4P’s of marketing i.e., product, price place and promotion (cited in Kotler, 2013). Marketing mix is the backbone of every marketing strategy and plan. But, it is not easy to do marketing of green products (Dahlstrom, 2011). Despite of several benefits of green products, there are basically two concerns for purchasing these kinds of products; first, green products should be superior to the conventional products and secondly, the customers have to be made aware of green product (Meyer, 2001). Bio-toilets are far superior to conventional toilets. According to World Watch Predictions Report (2007), more-severe droughts and worsening water shortages, due to the earth’s climate changes, have led to an increased interest in bio-toilets. These

toilets once deemed just for “hippies” and for areas without access to municipal sanitation. But, bio-toilets have evolved into sophisticated machines that are preferred over conventional toilets now-a-days. In addition to potentially saving the planet, bio-toilets also reduce billions of litres of water wastage through no-flush or extremely low-flush systems. Bio-toilets also provide nutrient-rich compost and even fertilizer for crops (as per Water and Sanitation Programme, 2011).

As far as awareness and education is concerned, it is the key to providing answers for product and market development. It is very necessary to develop general product information for successful communication mix i.e., mass communication and personal communication. In case of these kinds of products, personal communication is more effective i.e., direct and interactive marketing. Moreover, sales teams can also be hired, trained and motivated for selling bio-toilets. Training includes explaining how to use bio-toilet in various applications. Once prospects understand the product, they will make the proper buying decision. Feedback can also be taken from customers to understand more about customer requirement.

Sometimes, the customers also resist paying the premium pricing of green products (Johri and Sahasakmontri, 1998). But, the economic impact of Rs 2.4 trillion is due to inadequate sanitation in India which means a health related loss of Rs 1.74 trillion (as per Water and Sanitation Programme, 2011). Because, open defecation and the failure to confine excreta safely, are the reasons that contribute to proliferate of disease and infection through the bacteriological contamination of water sources. Improved hygiene practices by entire communities, including the use of sanitary toilets, can effectively break this cycle of disease transmission (as per Water and Sanitation Programme, 2011). In addition to this, the cost of construction and operation of a bio-toilet is less than the conventional toilet (Triastuti *et al.*, 2009).

Even, the pricing of bio toilet is the main criterion for Gram panchayats, other rural governing bodies and state government initially. From the Central Government initiatives like NREGA, central rural sanitation programme, and State government can also initiates to achieve ODF status, and winning Nirmal Gram Puraskar for every village and become Nirmal Rajya –a state free from the scourge of open defecation (Sikkim has become first Nirmal Rajya) can be good solution for that.

Bio-toilet is designed with the aim of accelerating decomposition of human excreta, optimizing efficiency and minimizing any potential environmental or nuisance problems (odor).By using bio-toilet, the water usage for defecate would be reduced by 50 percent because the flushing water is not necessary and saved water can be used for irrigation purposes also the black water (toilet waste) is not discharged directly to the river which prevents water degradation and billions of money which Government spends on this can be prevented.

It is also important to determining how to deliver the value (product and services) to the target market. Proper channel management among retailers, wholesalers, and door to door selling must care off. Usage of bio-toilet can be increased by creating awareness and also giving discounts to the heavy customers. Installation of bio-toilet can be done according to the target segment. There is virtually no known place where installation of bio-toilets is not beneficial. They can be portable and movable and requires very less maintenance. In Person meeting with the client will be required i.e. approach of Direct Marketing for lead generation and so on. Bio-toilet suppliers should give ratings to their customers based on expected purchased made by them in future. These ratings can solve the problem of matching supply with the demand. The marketing approach focuses on reaching and selling a high value product. There is no single solution for marketing of zero waste toilets i.e. bio-toilets: every situation is different. Therefore, this project presents a mix of contextual theory and hands-on tools and ideas for bio-toilet business. It focuses on some of the problems frequently encountered by community of people which do not have access to toilet. Hence, the main reason for its failure is because lack of efforts of marketing of its benefits.

3. Research Methodology

The present study has following objectives:

- To know the existing and future demand of Bio-toilets.
- Developing marketing strategies and plans for Bio-toilets.

For achieving these objectives, a properly planned method will be used. A detailed survey of rural areas of Nagpur district (Maharashtra) will be done in order to know the present and future demand of bio-toilets (Appendix D and E). The survey will include various barriers that may affect the use of Bio-toilet. The inputs needed for developing the marketing model will be discussed with the Gram panchayats, other rural governing bodies and state government with the help of a questionnaire (Appendix F). The demographic profile will help in identifying the segments to be targeted. The marketing experts will analyze the collected in order to know the prospective segment, positioning, and marketing strategies. The group of expert will analyse the needed changes in product, pricing, distribution system and promotional activities.

4. Findings

This study will help in making the villages clean and nearby region free from water-prone diseases by providing proper sanitation facility. Usage of bio-toilets will also lead to environment friendly sanitation. The demand of the bio-toilet will be created with the help of marketing tools which will result in minimization of human excreta waste of the region. This study will come up with the dual benefit to the society: (a) eliminate open defecation and, (b) disease free area. In addition to this, the speedily installation of toilets will be easy without affecting the environment. Moreover, the change in the product installation with respect to the location, pricing to meet the expenditure capacity, distributional and promotional activities like education, creating awareness and in-person meeting will benefit the sale of bio-toilet. As this study talks about only single kind of waste, the future research can work on handling the other type of waste like plastic, medical waste, metal, and so on.

5. Appendix

5.1. Appendix A: Requirement of toilet

Non Availability of Toilets in India:

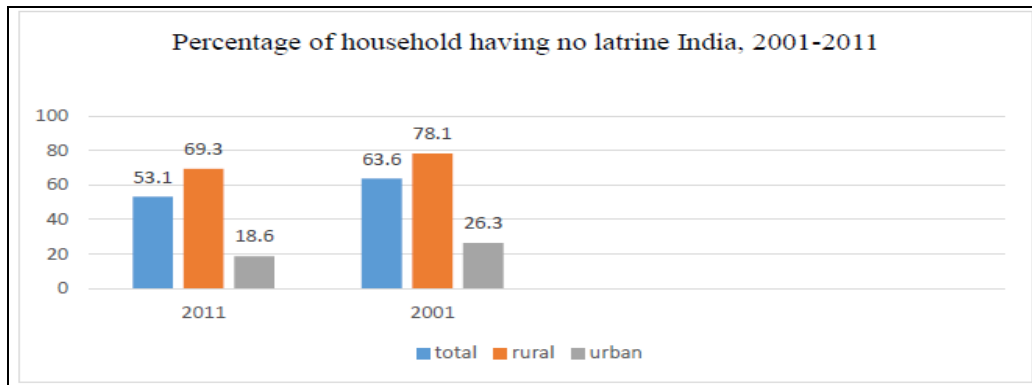


Figure 4

Source: Census of India 2011 –Availability and Type of Latrine Facility: 2001-2011

Non Availability of Toilets in Maharashtra:

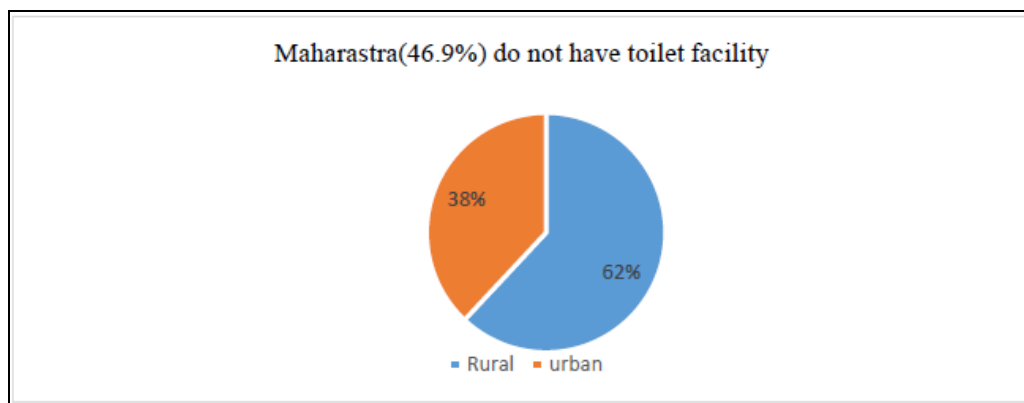


Figure 5

Source: Census of India 2011 –Availability and Type of Latrine Facility: 2001-2011

5.2. Appendix B: Dealers of Bio-Toilets

Following retailers/distributors are dealing in bio-toilets in Maharashtra:

1. Go Green Solutions Private Limited, Nagpur

Address: 1, Samarth Nagar (W) Ajni Square, Wardha Road, Nagpur - 440015, Maharashtra, India

Phone: +91-9373108518

2. West Coast Enterprises Pvt. Ltd., Pune

Address: Sneh Center, 4th Floor, Office No. 14, F. P. No. 556/2, F. C., Road, Lalit Mahal Chowk Shivaji Nagar, Pune - 411005, Maharashtra, India

Phone: 0995335950

3. Samhita

B-305, Cello Triumph, I B Patel Road, Goregaon East, Mumbai 400 063 INDIA

Source: <http://dir.indiamart.com/impcat/bio-toilet.html>

5.3. Appendix C: Parameter during Working of Bio-Toilets

Consideration for the Operation:

	Expected	Present
Moisture content	60-65%	
Temperature	-55 to 60°C	
Feces/sawdust ratio(F/S)	25%	
pH	6-7	
Mixing frequency	-	-

Table 1

Measurements of Content in Sawdust Mixture:

	Present
Oxygen availability	
N-total(%)	
C/N ratio	
P(P ₂ O ₅) (%)	
K(K ₂ O) (%)	
Na(Na ₂ O) (%)	
Bulk density	
Porosity	
Water retention	

Table 2

Source: Zavala, M. A., Funamizu, N., and Takakuwa, T. (2005). Biological activity in the composting reactor of the bio-toilet system. *Bioresource technology*, Vol. 96 No. 7, pp. 805-812.

5.4. Appendix D: Demographics of Nagpur Division

Nagpur Division

District	Population	Literacy Rate (%)	Area(km ²)	Tehsils	Governing Body
Bhandara	1,198,810	80	4,087	7	Municipal Council
Chandrapur	2,194,262	59.41	10,690	15	Municipal Corporation
Gadchiroli	1,071,795	60.10	14,412	8	Municipal Council
Gondiya	1,322,331	85.41	4,843	8	Municipal Council
Nagpur	4,653,171	89.50	9,897	14	Municipal Corporation
Wardha	1,296,157	80.00	6,310	8	Municipal Council

Table 3

Source: Census of 2011

5.5. Appendix E: Status of Expected Demand

In Country:

	India	North/West	East	South
Volume				
Volume Growth				
Distribution				
Distribution Growth				
Urban/Rural				
Number Of People Benefited				

Table 4

In State

	Maharashtra	North/West	East	South
Volume				
Volume Growth				
Distribution				
Distribution Growth				
Urban/Rural				
Number of People Benefited				

Table 5

In Division

	Nagpur Division	North/West	East	South
Volume				
Volume Growth				
Distribution				
Distribution Growth				
Urban/Rural				
Number Of People Benefited				

Table 6

Types of Bio-Toilets		
Stationary Bio Toilet (ST-Series)	Non Temp. Controlled (For plane areas)	Temp. Controlled Solar Powered, (For Hilly and cold regions)
Independently Mounted Mobile Bio-Toilets (IMMT- Series)	For Rail Coaches, Buses, Ships and Boats	

Table 7

5.6. Appendix F: Segmentation for Bio-Toilets

Customer Group	Segment Name
Geographic Location	
Attitude	
Perceptions	
Uses	
Quantity	
Quality	
Ability to Pay	
Willingness to Pay	
Purchasing Behaviour	
Competing Products	
Estimated Potential	

Table 8

Status of Sales:

Type of Bio-Toilet	Description and Location	Volume	Frequency of Demand	Number of Customers	Comments (e.g., Income, Reliability, Payment Terms etc.)

Table 9

Awareness about Bio-Toilet

Aware Since	% Response	Who Motivated	%Response
		Through training	
		Field demonstration	
		TV, Newspaper, Magazine, etc.	
		Word of mouth	

Table 10

Usage Status of Bio-Toilet

Date of purchase	Region	Type of bio-toilet	Collection of compost	Maintenance expected date

Table 11

Questionnaire

- Question seek to quantify issues
- How many villages are located within a radius of 30 km from city?
- How much compost could they apply?
- Where (at what distance) are other potential customers located?
- How can we spot and choose the right region?
- How can we differentiate our offering?
- How can we compete against traditional toilet manufacture?
- What are the advantages/disadvantages?
- What features must bio-toilet have?
- How can we establish multiple channels and yet manage channel conflict?
- How can we keep our customers loyal longer?
- How to educate people better about product?

Sample of Questionnaire

- Do you have toilet?
- If yes, what type of toilet?
- What are your expectation and perception of bio-toilet?
- What is bio-toilet for you?
- What do people think in general about bio-toilet from your point of view?
- How did you get to know about bio-toilet?
- How can you access bio-toilet?
- What terms of payment do you prefer?
- If easily payable: Are you willing to pay the present prize?
- Do you use compost?
- How will you use bio-toilet?

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