



A STUDY ON EFFECTIVENESS OF WASTE MANAGEMENT IN HOTELS SPECIAL REFERENCE TO KERALA

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Abstract

The term 'Waste Management' collectively means the management of waste from its inception to the final stage of disposal. Thus, as one single unit it encompasses right from the collection, disposal, recycling, to which the processes of monitoring and regulation, respectively belong to, along with the legal frameworks that enable the occurrence of waste management.

We, humans, are always practising some primitive and most basic waste management methods and techniques since our inception thousands of years ago. The primal humans used holes dug in sands manually to bury their faecal matter along with burying the waste products. This was done to ward off the rodents and rats and other animals which thrived on waste products and also caused a lot of diseases spread in humans.

As days developed and flew, the practices we followed too started getting modernized and enhanced. Bio-degradation started developing rapidly and many of the wastes became non-bio-degradable for which an alternative method needs to be followed. These practices were modified according to every country's needs and values, thereby developing unique frameworks for each.

Along with these organic wastes other green products like grasses; vegetable remains are added in the right proportions to form the vermicomposting, which is excellent manure. This is one of the finest examples we can attribute to waste management recycling.

Effective Waste Management in Hotels

- 1. Characterization and Quantification of Waste in the Hotel Industry:** It is important to categorize the types and quantity of waste produced by every department of the hotel industry so that it is managed properly. For example, office waste (like papers, documents, brochures), household waste (jars, bottles, cardboard), organic waste (vegetable and fruit peels, flowers) can be segregated in color-coded bins for easy and hassle-free waste management.
- 2. Understand Waste Hierarchy:** This concept was presented by Waste on Line (2006) provides options to manage waste by prevention, minimization, reuse, recycle, recovery and disposal which prevents a lot of waste from going to the waste stream. Recovery is the most important part of the process because some value of the material is retrieved through recycling. The last step is disposal which generally involves landfill and incineration of waste.
- 3. Data Analysis:** Hotel industry generates a lot of waste and most of the time it is sent to the landfills without being treated properly. The first step in managing the data analysis of waste is to perform waste audit. Waste auditing is identifying the process of productivity from waste management practices in hotels. With the help of trash compactors or industrial balers wastes can the volume of waste can be immensely reduced which makes it easier to handle and cost of waste disposal is reduced. Right from hospitals to hotel chains compactors of different sizes,



shapes and convenience will prove to be perfect as a waste disposal tool. The organic waste in the hotel can be reduced with the help of a food composter. Composting is a biological process which needs certain temperature moisture, ventilation and carbon and nitrogen ratio. Compost is a very useful soil conditioner and fertile manure.

4. **Model and framework development:** A framework is developed with special focus on which can save cost on local vendors and labour cost for handling waste. It is classified into two:
 1. **Profitability from Recyclable and Compostable Waste** – This is the method of generating profit from the business events in a firm. The tool to increase the total profit by any methodical plan.
 2. **Sustainability from Waste Management** – Everything you need to survive is sustainability. When the social, economic and environmental aspects are taken care of and has all the required conditions to sustain from managing waste, any framework can survive if these three aspects are within.

Managing waste in hotels is one of the major issues and ends up not being properly treated. It is mandatory for hotel industries to develop a complete framework which helps in optimizing each waste material in the industry and also reduce environmental impact.

Advantages or Benefits of Waste Management

As said above, Waste management involves the collection and disposal of both hazardous and non-hazardous wastes from all the sectors of a society. We shall now look in detail the benefits of proper garbage disposal.

1. This practice is highly lucrative

The Journal of Waste management says that the revenues generated by the waste management would top by \$60 million by 2018. But, there are only a few people who sincerely consider this as an industry into various facets of waste management like recycling and reusing, and reap the benefits. Now many companies are looking forward to associate themselves with this industry and are ready for a long term investment.

2. Keeps the environment clean and fresh

Perhaps, the greatest advantage of waste management is keeping the environment fresh and neat. These waste disposal units also make the people go disease free as all the resultant wastes are properly disposed and taken care of. More number of waste disposal units can be placed in all the tier-1 and tier-2 cities so that the waste disposal process can be prepped up. Also a point worthy of our consideration here is that this advantage can be taken into account only if extensive and proper safety measures are implemented along with proper waste disposal techniques. There is no use in simply implementing a half-baked technique which, if no use to both the people and the environment. This is the best effects of proper waste disposal.

3. Saves the Earth and conserves energy

This characteristic of waste management includes specifically the recycling aspect. As recycling of waste helps in reducing the cutting down of trees. This cutting of trees is mainly done for the production of paper.



By using this method, we can use the recycled waste to make quality papers rather than relying on trees. Also, recycling needs only a minimal amount of energy for utilization and complete processing. The resultant product we obtain is a renewable source of energy and is eco-friendly.

4. Reduces environmental pollution:

As explained above, waste management if done in a proper manner not only eliminates the surrounding waste but also will reduce the intensity of the greenhouse gases like methane, carbon monoxide which is emitted from the wastes accumulated.

The depth of the existing landfills and incineration will be curbed, thereby cutting down the harmful factors that affect the environment. Also, the amount of fossil fuels will get reduced in this manner, leading to a cleaner and a greener environment.

5. Waste management will help you earn money

1. Can you believe if I say that what I have said above is absolutely true? Yes, waste management earns you a few extra bucks every month. Actually, there are many companies which will pay you for your waste.
2. Right from old and used bottles to tin cans and e-wastes, all kinds of wastes are collected and paid. These wastes are then segregated according to the extent of pollution they cause to the environment and these wastes are recycled accordingly for various purposes.
3. There are also crash courses available which will aid you to reuse your trash. Above all, by following this method you can create an awareness to your fellow people by earning money, which is a win-win concept.

6. Creates employment

Again, this aspect too is unbelievable for you... right? You may even ask how come this is possible? But in all the facets of waste management, a huge amount of labour is needed. Right from the collection to the final step of segregation, every phase needs manpower and ultimately a large number of employment opportunities get opened up. This claim is evident from the labour statistics provided by the US government, according to which around 3.1 million new jobs are produced due to the waste management factor.

Disadvantages of Waste Management

We have now seen the merits of waste management in detail. Let us now have a look at the disadvantages also.

1. The process is not always cost-effective

Yes, though it may pay cash to the contributors, the truth is these process needs a lot of money, time and land to set up a plant and run. As the amount of waste that is being contributed to the waste product unit increases, so are the numbers of plants that process these resources.

Setting up a huge factory obviously needs a lot of money, and this management will start fetching yields only in the long run. Hence, this is not seen as a short-term lucrative investment. While dumping more and more garbage's in the landfills because only \$50 per ton, recycling them in the proper manner will cause \$150 per ton, which is exactly, triple the cost and thus many of the companies tend to switch over to the landfill method itself.



2. The resultant product has a short life

This is also true since the resulting recycled product cannot be expected to have a durable quality. As the product itself has its origin from the remains of the other trashed waste products and heaps of partially used ones. The recycled product, though, is eco-friendly is expected to have a shorter life span than the intended original one.

3. The sites are often dangerous

As the waste management sites include the landfills to recycling units under its aegis, these sites are highly susceptible to fungal and bacterial growth thereby leading to various diseases. Even the debris formation will be accelerated by such bacterial growth, which makes it totally unsafe for the workers who work there. It also causes widespread pollution and releases harmful chemicals. These chemicals, when mixed with drinking water or any other consumable item pose a high amount of danger to human health.

4. The practices are not done uniformly

Still, a large scale of these waste management practices are done only as a small scale process and is mostly confined to residential homes, schools and colleges and is not practised in a uniform manner in large industries and conglomerates. It is not even practised globally, as the global level consists of curbing oil spills, ocean disposals and decreasing the tree felling.

5. Waste management can cause more problems

Though waste management creates employment, it only has the ability to produce low quality jobs. These jobs include right from sorting the garbage collected to the intensive and laborious jobs that are needed in the factories and outlets. Daily basis collection of garbages will make the streets look unpleasant and unhygienic leaving excess debris on the streets to rot up. Even after the successful completion of the final stage, many chemical stews will be left behind which needs to be properly and completely disposed, otherwise, they will also pose a threat to the environment which makes the ultimate purpose of waste management go redundant. Also, in the areas where these management units are present, it is noticed that the groundwater gets affected. So, it too causes a considerable extent of water pollution and land pollution.

Food Industry

The food industry is a complex, global collective of diverse businesses that supplies most of the food consumed by the world's population. Only subsistence farmers, those who survive on what they grow, and hunter-gatherers can be considered outside the scope of the modern food industry.

The term food industries covers a series of industrial activities directed at the processing, conversion, preparation, preservation and packaging of foodstuffs. The raw materials used are generally of vegetable or animal origin and produced by agriculture, farming, breeding and fishing.

The food industry today has become highly diversified, with manufacturing ranging from small, traditional, family-run activities that are highly labour intensive, to large, capital-intensive and highly mechanized industrial processes. Many food industries depend almost entirely on local agriculture or fishing. In the past, this meant seasonal production and hiring of seasonal workers. Improvements in food processing and preservation technologies have taken some of the pressure off workers to process food quickly to prevent spoilage. This has resulted in a decrease in seasonal employment fluctuations.



However, certain industries still have seasonal activities, such as fresh fruit and vegetable processing and increases in production of baked goods, chocolate and so forth for holiday seasons. Seasonal workers are often women and foreign workers.

The world's food product output has been increasing. World exports of food products in 1989 totalled US\$290 billion, a 30% increase over 1981. Industrialized market economy countries had a 67% share of this export. Much of this increase can be attributed to an increased demand for processed food and drink, especially in developing countries where the market has not yet been saturated.

This increase in output of food and drink products, however, has not resulted in increased employment because of intensified competition, which has resulted in decreased employment in many food industries, especially in industrialized countries. This is due to increased productivity and mechanization in many of these industries.

Demographic pressure, uneven distribution of agricultural resources and the need to insure preservation of food products to facilitate their better distribution explain the rapid technical evolution in the food industries. Constant economic and marketing pressures drive the industry to provide new and different products for market, while other operations may make the same product in the same way for decades. Even highly industrialized facilities often resort to seemingly archaic techniques when starting new products or processes. In practice, to satisfy population requirements, there is a need not only for a sufficient quantity of foodstuffs, which presupposes an increase of production, but also strict control of sanitation to obtain the quality essential to maintain the health of the community. Only modernization of techniques justified by production volumes in a stable production environment will eliminate manual handling hazards. In spite of the extreme diversity of the food industries, the preparation processes can be divided into handling and storage of raw materials, extraction, processing, preservation and packaging.

Scope

Hotels are not immune to this issue of food waste. Only a bit more than half of the food that hotels serve in a buffet is actually eaten, not only contributing to waste but also further hurting the already slim profit margins in the foodservice industry by throwing away the remaining 40 percent of food, according to a recent study.

Below are five ways to reduce food waste and better manage a hotel's food production.

1. Conduct a Food Waste Audit

The two main factors that need to be taken into account when tracking food waste are how much food is being wasted and how many people are visiting a restaurant. This will managers a better idea of where the biggest source of waste is. There are two methods to track this information. A food log system keeps track of what is being thrown out, why it's being thrown out, and how much is wasted. A traffic log system maintains a daily log of how much traffic the hotel received, what the weather was like, and other helpful information for planning the following year's guest traffic and how much food to order.

2. Avoid Wasting Ingredients Before They're Prepared

Evaluate inventory to learn if food sits around too long in storage and make sure that the hotel is not over-ordering to maximize the shelf life of perishable products. Train staff to be waste-conscious and



efficient, and create a food waste strategy with the help of the hotel’s chef to minimize waste in ways such as repurposing ingredients.

3. Create a Plan for Leftovers

Monitor the portion sizes served to guests through staff observations. Manage customer expectations by preparing and serving dishes exactly as described on the menu. Track the popularity of each dish and cook accordingly. Encourage diners to take any of their leftover food home with them. Also, consider offering staff meals or donating the remainder of the food.

4. Create Awareness and Engage F&B Teams

Get the hotel’s team onboard with the challenges of implementing a food waste strategy. Make the team aware of the problem of food waste and implement strategies that will change how things are traditionally done in the kitchen. Collaborating as a team is critical to putting a strategy into action. Also, considering the turnover levels in the foodservice industry, it is important to having food waste management training in place for new staff.

5. Compost

Hotels can compost leftover food on the property or work with a composting partner. Schedule regular check-ins to monitor food waste and make any changes as necessary ,we can also use the new technology which converts the food waste into powder form in few minutes and use this powdered particles as fertilizers.

Objective

1. To analyze different methods of waste management used by the hotel
2. To analyze whether they are aware of biogas plant and its method
3. To analyze the average quantity of waste per day in a hotel

Limitation in Waste Management in Hotel

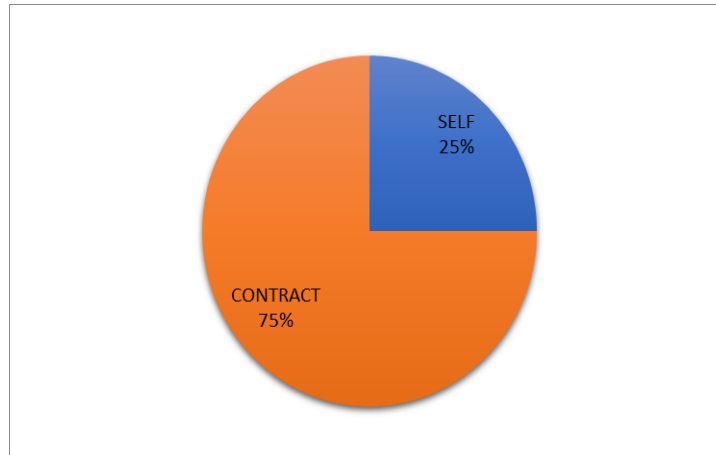
- * Data collecting is time consuming
- * Lack of knowledge in speaking English
- * Some of the managers were not able to understand the questions given in the questionnaire
- * In reality some of them were not ready to disclose their personal details regarding the disposal of waste management in their hotel
- * Some of them didn't give attention to our question ,as they were busy in taking care of their customers.

Data Analysis and Interpretation

Questionnaire

1. What type of service do you use for waste management in your organization?

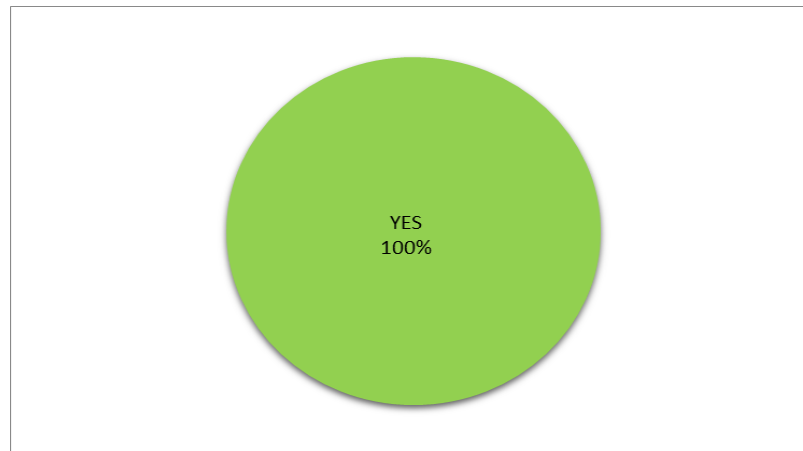
TYPE	NUMBER	%
SELF	1	25
CONTRACT	3	75
TOTAL	4	100



Interpretation: 75% of the organisation use contract based for Waste management and less than 30% use self some for Waste management.

2, Does the waste management staff have job descriptions detailing their tasks ?

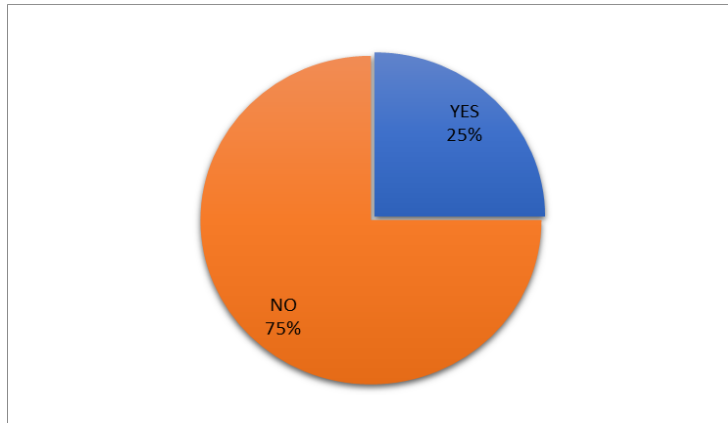
TYPE	NUMBER	%
YES	4	100
NO	0	0
TOTAL	4	100



Interpretation : 100% of the hotels have job description details for their staffs for Waste management.

3, Do you agree that the quantity of waste sent for disposal to landfill should be minimised ?

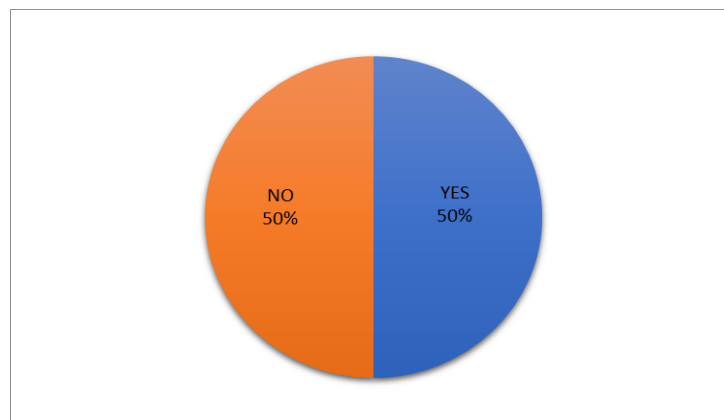
TYPE	NUMBER	%
YES	1	25
NO	3	75
TOTAL	4	100



Interpretation : less than 30% of the organisation thinks that the Quantity of waste sent for disposal to landfill should be minimised in waste management and 75% of organisations think that Quantity of waste should not be minimised .

4, Have measures been taken to reduce the use of disposable products to a minimum, e.g. cups, plates and cutlery ?

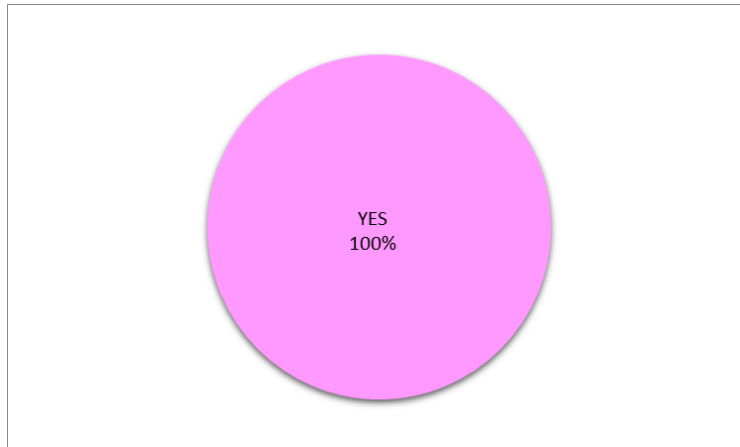
TYPE	NUMBER	%
YES	2	50
NO	2	50
TOTAL	4	100



Interpretation: 50% of the hotel Organisation have taken measures to reduce of disposable products to a minimum and other 50% of organisation have not yet taken measures to reduce use of disposable products.

5, Does the hotel prefer local products (200 km. radius), whenever these have less impact on the environment than non-local products?

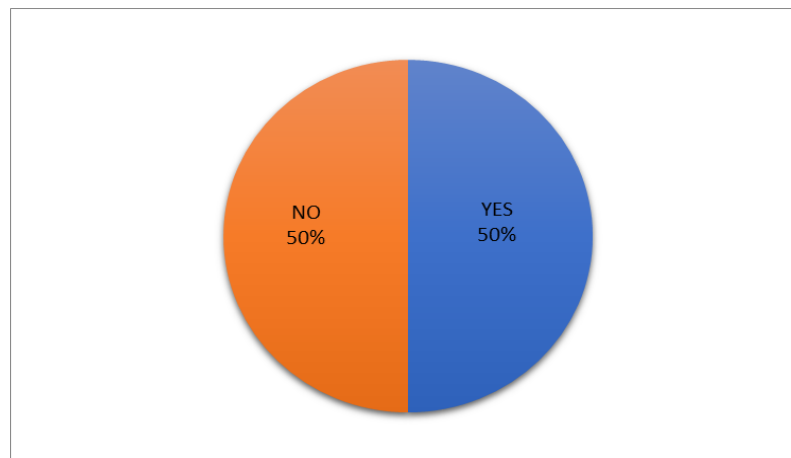
TYPE	NUMBER	%
YES	4	100
NO	0	0
TOTAL	4	100



Interpretation : 100% of the Organisation prefer local product (200km radius) for cooking and stuffs as cost is less and have less impact on the environment .

6, Does the hotel in general prefer recyclable products in recyclable packaging?

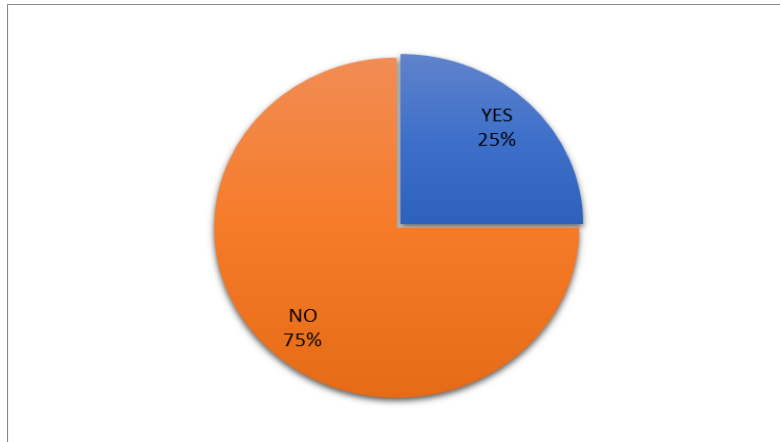
TYPE	NUMBER	%
YES	2	50
NO	2	50
TOTAL	4	100



Interpretation : 50% of the hotel Organisation generally prefer recyclable products in recyclable packaging and 50% of hotel Organisation don't prefer recyclable products.

7, Does the hotel avoid fossil-fuel as much as possible?

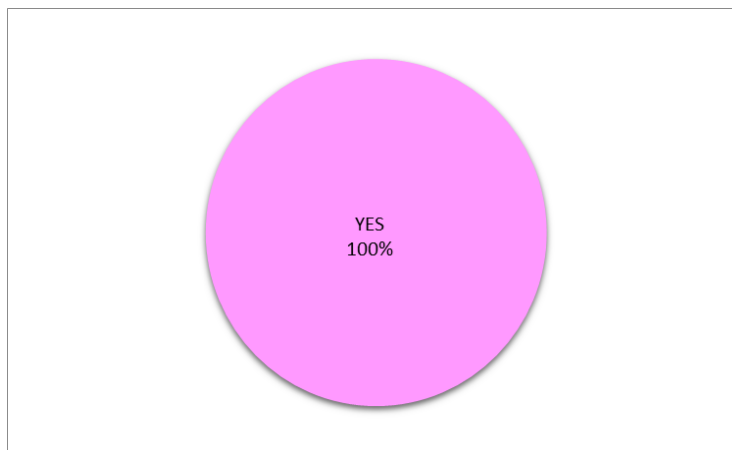
TYPE	NUMBER	%
YES	1	25
NO	3	75
TOTAL	4	100



Interpretation : 75% of the hotel Organisation doesn't avoid the use of fossil fuel in hotel and less than 30% of the hotel Organisation avoid fossil fuel as much as possible

8, Are you using eco-friendly methods to dispose waste ?

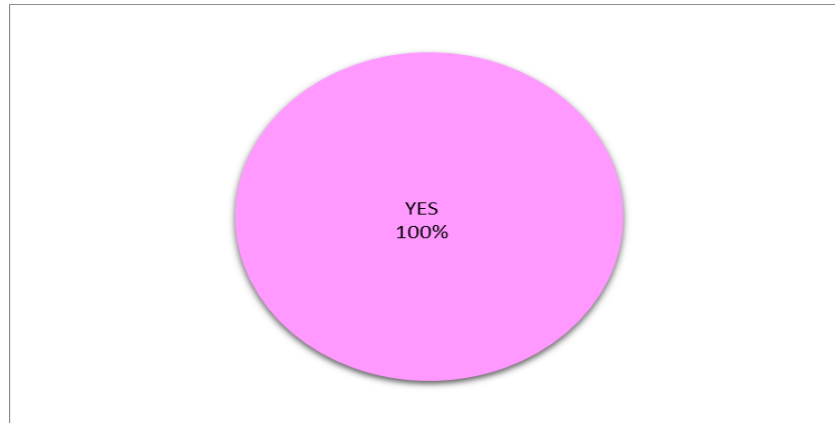
TYPE	NUMBER	%
YES	4	100
NO	0	0
TOTAL	4	100



Interpretation: 100% of the organisation use eco-friendly method to dispose waste in waste management

9, Do you make sure that the kitchen is clean from the vegetable peel and leftover ?

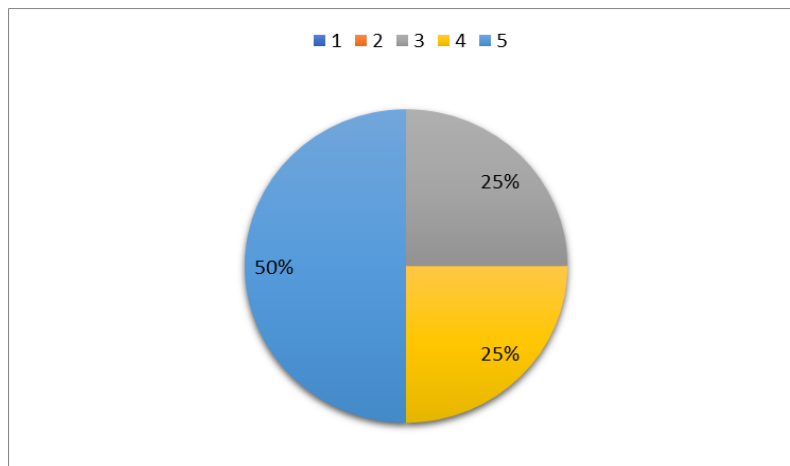
TYPE	NUMBER	%
YES	4	100
NO	0	0
TOTAL	4	100



Interpretation: 100% of the Organisation make sure that the kitchen is clean from the vegetable peel and leftovers

10, How much will you rate your waste management of your hotel out of 5

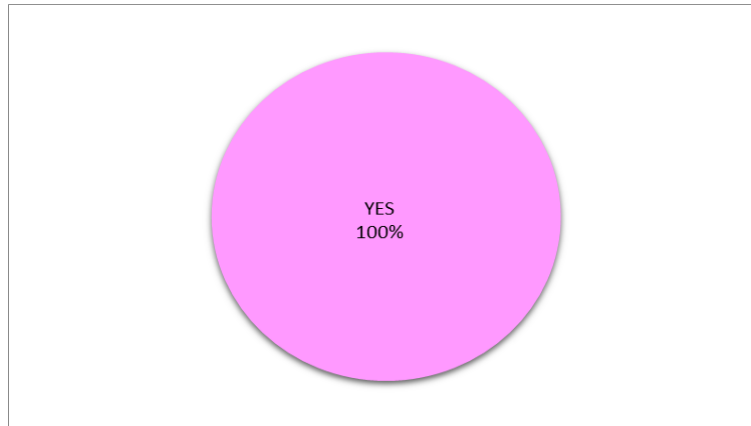
TYPE	NUMBER	%
1	0	0
2	0	0
3	1	25
4	1	25
5	2	50



Interpretation :50% of the hotel Organisation rate their waste management of their hotel as 5, 25% of the hotel Organisation rate their waste management rate as 3 out of 5 .

11, Are you using it in a sustainable manner?

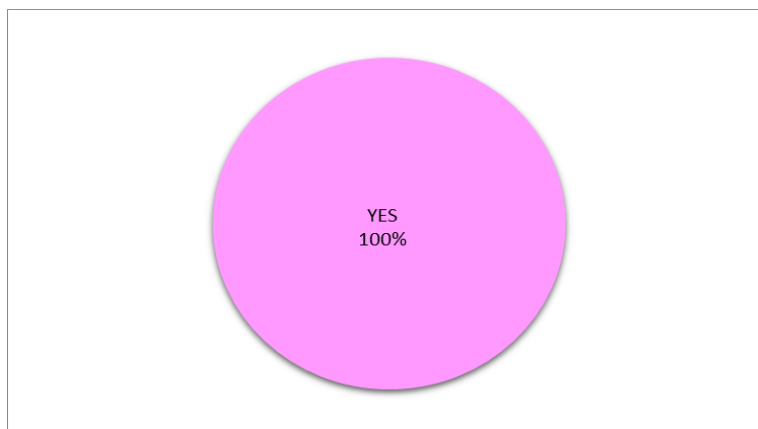
TYPE	NUMBER	%
YES	4	100
NO	0	0
TOTAL	4	100



Interpretation : 100% of the organisation use sustainable manner for Waste management.

12, Are you using lawfull methods to dispose waste?

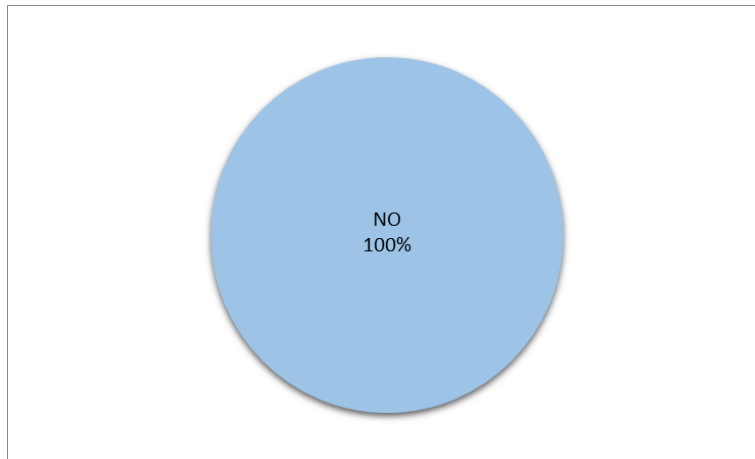
TYPE	NUMBER	%
YES	4	100
NO	0	0
TOTAL	4	100



Interpretation :100% of the hotel Organisation use lawfull methods to dispose waste

13, Are you using bio gas from biodegradable waste for cooking ?

TYPE	NUMBER	%
YES	0	0
NO	4	100
TOTAL	4	100



Interpretation : 100% of the organisation doesn't use biodegradable waste, for cooking as the maintenance is high .

14. Do you try to minimize the wastage of food ?

TYPE	NUMBER	%
YES	4	100
NO	0	0
TOTAL	4	100



Interpretation : 100% of the hotel Organisation try to minimise the wastage of food so as the reduce the wastage of materials used in cooking

Findings

1. 75% of the organisation use contract based for Waste management and less than 30% use self some for Waste management.
2. 100% of the hotels have job description details for their staffs for Waste management.
3. less than 30% of the organisation thinks that the Quantity of waste sent for disposal to landfill should be minimised in waste management and 75% of organisations think that Quantity of waste should not be minimised .
4. 50% of the hotel Organisation have taken measures to reduce of disposable products to a minimum and other 50% of organisation have not yet taken measures to reduce use of disposable products.



5. 100% of the Organisation prefer local product (200km radius) for cooking and stuffs as cost is less and have less impact on the environment .
6. 50% of the hotel Organisation generally prefer recyclable products in recyclable packaging and 50% of hotel Organisation don't prefer recyclable products.
7. 75% of the hotel Organisation doesn't avoid the use of fossil fuel in hotel and less than 30% of the hotel Organisation avoid fossil fuel as much as possible .
8. 100% of the organisation use eco-friendly method to dispose waste in waste management.
9. 100% of the Organisation makes sure that the kitchen is clean from the vegetable peel and leftovers.
10. 50% of the hotel Organisation rate their waste management of their hotel as 5, 25% of the hotel Organisation rate their waste management rate as 3 out of 5 .
11. 100% of the organisation use sustainable manner for Waste management
12. 100% of the hotel Organisation use lawful methods to dispose waste .
13. 100% of the organisation doesn't use biodegradable waste, for cooking as the maintenance is high.
14. 100% of the hotel Organisation try to minimise the wastage of food so as the reduce the wastage of materials used in cooking.

Conclusion

Waste management in hotels, particularly in the context of Kerala, presents a multifaceted challenge that requires careful consideration and comprehensive solutions. The unique environmental, cultural, and economic characteristics of Kerala add layers of complexity to waste management practices in the hospitality sector. This conclusion highlights some key takeaways and references specific to waste management in hotels in Kerala.

Collaboration among stakeholders is pivotal in addressing waste management challenges. Hotels can partner with local communities, waste management authorities, and NGOs to implement effective waste management practices. Kerala's strong community-driven initiatives can serve as inspiration for inclusive waste management programs in the hospitality sector.

References

1. "Best Practices for Hotel Food Waste Reduction" - A report by the World Resources Institute that provides practical guidance on reducing food waste in hotels, including case studies and strategies.
2. "Hotel Waste Management: A Review of Environmental and Cost Factors" - This paper explores the environmental and economic aspects of waste management in hotels and presents strategies for improvement.
3. "Waste Management and Minimization in the Hospitality Industry" - An article that discusses waste management challenges specific to the hospitality sector and proposes strategies for minimizing waste.
4. "Green Hotelier: Waste Management" - A resource provided by the International Tourism Partnership that offers insights and practical tips for hotels to improve their waste management practices.