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Awareness and Readiness for the Implementation of Edible Spoon Among Local Community

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Abstract: Reusable plastic cutlery has been used for years in Malaysia and will be discarded mostly after a single-use. Hence, the landfills and waterways are dumped with plastic waste and pollutants. This has become the world's environmental issue as this substance will decompose up to 1000 years. Therefore, edible cutlery has been invented to save mother nature as it is 100% formulated from organic ingredients and it is a self-decomposing spoon making it environmentally friendly cutlery to be used. This could inspire the community to think of alternative and sustainable ways for consumption and act responsibly towards the environment to minimize waste and pollution as much as possible. This study was conducted to investigate the acceptance and the readiness of the community toward the use of edible spoon in their daily routines in Malaysia. There were two target groups of this research respondents, consumer and business owner. This study will also highlight the factors that influence the likelihood of the community to purchase and use the edible spoon for personal use or for business and commercial purposes.

Key words: *environmental pollution, cutlery, edible cutlery*

INTRODUCTION

Cutlery has been widely used by everybody in this world as a tool to serve and consume food. Cutlery consists of knives, forks and spoon to consume food. The spoon is the oldest eating utensil on the planet followed by fork and knife. This is not particularly surprising if one considers that nearly as long as humans have needed food, they have required something to scoop it up with. Unlike knives and forks, for the most part, needed to be fashioned, natural spoons could be utilized by employing such things as seashells or conveniently shaped stones. The earliest known instances of these didn't have handles yet, but from these humble beginnings, the spoon was born. The evolution of the spoon has started during the Stone Age of mankind where the cutlery is made of hollowed-out pieces of wood or seashells that were connected to wooden sticks [1]. During the Bronze age, the spoon has been benefited from the great advanced in the production of weapons and objects made from bronze and copper. The durability of the spoon has been extended by using metal during the Iron Age. During the 1920s, the invention of stainless steel enabled the creation of eating utensils that were easy to produce and maintain. In the 20th century, plastic was introduced to replace and compete with any other forms of the spoon that already in existence.

Plastic has become popular after metal as plastic is known as the most durable materials compared to the others. The plastic materials are normally will be discarded after a single-use. According to statistics presented by the European Commission in 2016, single-use plastic cutleries contribute to 4.24 per cent of the marine litter on European beaches [2]. It is then will be soiled in the trash which then ends up in the landfill or burned. Burning emits toxic gases will harm the atmosphere and increase the level of VOCs in the air while landfills will be flooded with plastic waste as it takes 1000 years to decompose on the earth. This issue has led to the imbalance of the ecosystem that will increase the deaths of the woodland animals as well as inhibiting soil nutrients. The waterways were also affected and it is dangerous to sea life especially those of mammal variety.

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Therefore, edible cutlery has been introduced to replace the plastic cutlery. Edible cutlery is completely biodegradable and does not require any special conditions to decompose. Moreover, it is 100% formulated from home-made organic ingredients and it can be consumed at the end of the meal. It can be used to eat all types of food whether it is hot or cold, solid or liquid; one can have a bowl of hot soup with it at the same time cold desserts as well. This solution could save our Mother Earth from continuously being polluted by the plastic waste and at the same time, it will contribute towards a healthier planet.

DEFINITION

Cutlery

- **Cutlery** includes any hand implement used in preparing, serving, and especially eating food in Western culture [3]
- Knives, forks and spoons used for eating food [4].

Utensils

- Utensil is a tool with a particular use, especially in the kitchen or in a house [4]

Edible

- Edible means suitable or safe for eating [4].

LITERATURE REVIEWS

The demand for plastic cutlery is high each year. Various businesses ranging from fast-food restaurants, bakery chains, airlines and to electrical and electronic parts, housewares products, toys and plumbing supplies are all made of plastics. It was reported by MPMA that about 2 million tonnes of resins for the plastics industry are produced locally in Malaysia per annum [5]. The Earth Day Network reported that about 9.1 billion tonnes of virgin (non-recycled) plastic has been produced to date, 6.9 billion tonnes of plastic waste have been generated, only 9% has been recycled and plastic production is predicted to triple in the next 25 years [6].

However, as the global warming issue is getting serious, the demand for the disposable and compostable cutlery is growing especially from the food sector. According to research by Future Market Insights, on the disposable cutlery market, the global revenue is poised to witness a moderate 4.3% year-on-year growth in 2019 [7]. The report pointed out that growing demand from the quick-service-restaurants sector is pushing consumption of disposable cutlery in the foodservice outlets segment. It is a wide-eye opening for the consumers to save the mother nature by opting for greener and sustainable products.

The pushing demand for disposable cutlery is the growth of online food service. There is an effort of maintaining the element of sustainability and helping the disposable cutlery to gain traction through the increasing number of online food ordering. These highlight a very strong demand for edible cutleries among consumers [8].

Edible cutleries as mentioned previously, are self-decomposed and environmentally friendly alternative to the present single-use plastic cutleries. It is made from 100% organic edible ingredients such as wheat and sorghum. Sorghum is the main ingredient of the edible spoon as it has a super absorbent ability which makes the usage of edible cutleries extremely versatile, that is, it will not only be suitable with rice or wheat-based food but also complement well with ice cream, yoghurt, and a variety of soups, as it does not degrade within hot or cold liquids [9]. The ingredients needed to make the spoon are wheat flour, sorghum flour, salt, food colouring and water. The process of producing an edible spoon is as follows:

1. Mix the wheat flour and sorghum flour in a bowl and stir the mixture well.

2. Add salt into the mixture


3. Add water and knead the mixture to form into a dough

4. Separate/cut the dough according to the type of color/flavor preference and put it in another bowl.

5. Add different food coloring to each bowl and knead it thoroughly

6. Roll the dough and fix it in a spoon shape using an actual spoon as the mould.

7. Put the spoon shape dough into the oven. Set the temperature of the oven as 180 degree and bake for 10-15 minutes according to the suitability of the oven.

8. Cool down the spoon and separate the baked dough from the actual spoon mould. A cookie-like spoon is then produced.

The cookie-like spoon was created from the heating process that made the moisture from the dough evaporated. Malaysian Government has already enforced policies whereby starting from 2018 onwards, plastic bags usage will be charged with RM0.20 per bag and early this year straws will only be provided upon request. The acceptance of the policies by the consumers is overwhelming and very supportive along with the government to move towards a more sustainable country.

To achieve the ultimate end of plastic pollution, all stakeholders and policymakers must work together. The Energy, Science, Technology, Environment and Climate Change Ministry (MESTECC) has shared the three phases of the roadmap in addressing plastic pollution in Malaysia namely Phase 1 (2018-2021) the enforcement on the no plastic bags and straws, Phase 2 (2022-2025) the widespread of bio bag throughout the country and Phase 3 (2026-2030) the increased production of biodegradable and compostable items to eliminate the single used plastic bags [7].

Other than having these kinds of enforcements and programs to eliminate plastic pollution, edible cutlery is also beneficial to reduce the number of plastic cutlery in the market. It gives a lot of social impacts on everything that lives on the earth. Apart from its function as a spoon, it would also act as a

portion of food for the people after they have finished with their meal and even when the cutleries are not disposed of correctly, they would still be edible for the animals, birds, plant and marine life [10].

Edible cutlery is also responsible for energy and utility consumption. Sorghum based edible cutleries save 100 times the energy needed to create a single unit of a plastic spoon [9]. Unlike the manufacturing process of plastic cutlery, edible cutlery is using less electricity and water consumption. The CO2 emissions also can be reduced by more than 88 per cent during the manufacturing process as compared to plastic cutleries.

In terms of innovation and infrastructure, most of the plastic cutlery manufacturers use the vaseline-like substance on the spoons so that it does not get stuck with the mould during production [11]. This could lead to contaminated food and beverages as the oil film in the cutleries remain unwashed thus compromising the health and safety of the consumers. Sorghum-based cutleries have no preservatives, are completely organic, suitable for vegetarians, non-toxic and completely environmentally friendly [9], thus it is safer to be used and eaten right after.

Edible cutleries are also beneficial to life on the landfill and below water. According to statistics presented by the European Commission in 2016, single-use plastic cutleries contribute to 4.24 per cent of the marine litter on European beaches [2]. The edible cutleries biodegrade within 10 days when exposed to the environment [9] or eaten by animals or fishes without harming the ecosystem, unlike the plastic substitute which may take hundreds of years to decompose.

METHODOLOGY

This quantitative research design employed a set of questionnaire as the primary data. The questionnaire was drafted and distributed to the targeted research sample to obtain their responses. A total of 81 respondents of consumers in Tapah were involved and all samples were randomly selected from the various areas in Tapah district. As an overall, 81 responses were computed descriptively using Statistical Package for the Social Sciences (SPSS Statistics) version 23. A sample with larger than 30 and less than 500 is most appropriate for the researchers [12].

A set of questionnaire consisting of three sections was used in this research. Section A discusses the demographic profile; Section B discusses a series of questions about the awareness of a smart and innovative edible spoon and Section C discusses the readiness of the consumers on using the smart and innovative edible spoon. The respondents were surveyed through an online questionnaire given to them through the link given or door-to-door survey.

Treatment / Experience	Too often	Often	Seldom	Rarely	Never	Total
Frequency of eating out	9 11.1%	41 50.6%	21 25.9%	10 12.3%	0 0%	81 100.0%
Frequency of eating using plastic spoon	5 6.2%	17 21.0%	30 37.0%	28 34.6%	1 1.2%	81 100.0%

Table 1.0: The frequency of the consumers eating out and using plastic spoon

Table 1.0 exemplifies the frequency of the consumers eating out and using a plastic spoon. Based on the statistics, 50.6% from the total respondents often eating out, 37.0% seldom eating using a plastic spoon and only 21.0% often eating using a plastic spoon. Hence, it can be generalized that most of the restaurants in Tapah are still using the metal spoon to serve to the customers. This is part of their initiatives to reduce the use of plastic spoon in order to save the environment from being polluted by plastic waste. Reducing is the most important factor compared to reuse and recycle for minimizing the waste [13].

Table 2.0: The awareness of the consumers towards the smart and innovative edible spoon

Treatment / Experience	1	2	3	4	5	Total
Do you think edible spoon is biodegradable in nature?	0 0.0%	2 2.5%	9 11.1%	32 46.9%	38 46.9%	81 100.0%

Do you agree that the edible spoon is eco-friendly?	1 1.2%	2 2.5%	6 7.4%	29 35.8%	43 53.1%	81 100.0%
Do you agree that the edible spoon is suitable to be used in daily routine?	3 3.7%	3 3.7%	22 27.2%	25 30.9%	28 34.6%	81 100.0%
Do you agree that the edible spoon can be a substitute for a plastic spoon?	1 1.2%	4 4.9%	9 11.1%	28 34.6%	39 48.1%	81 100.0%
Do you agree that the edible spoon is durable to use?	4 4.9%	15 18.5%	26 32.1%	23 28.4%	13 16.0%	81 100.0%
Do you agree that we can eat comfortably using the edible spoon?	3 3.7%	7 8.6%	25 30.9%	33 40.7%	13 16.0%	81 100.0%
Do you agree that the edible spoon is an alternative to a plastic spoon?	1 1.2%	1 1.2%	10 12.3%	31 38.3%	38 46.9%	81 100.0%
Do you agree that the edible spoon can be promoted into the market?	2 2.5%	1 1.2%	8 9.9%	24 29.6%	46 56.8%	81 100.0%

Table 2.0 illustrates the awareness of the consumers towards the smart and innovative edible spoon. Majority of the consumers were strongly aware that edible spoon is biodegradable in nature and eco-friendly. The consumers were also strongly aware that edible spoon is suitable to be used in daily routine and it can be a substitute and alternative to a plastic spoon. The respondents were also believed that this edible spoon can be promoted into the market. However, 32.1% of the total respondents were not sure that this edible spoon is durable to be used or not.

Table 3.0: The readiness of the consumers towards the smart and innovative edible spoon

Treatment / Experience	Extremely interested	Not at all interested	Not interested	Not sure	Somewhat interested	Extremely interested	Total
How interested are you in changing your spoon into a disposable spoon?	19 23.5%	2 2.5%	2 2.5%	16 19.8%	41 50.6%	1 1.2%	81 100.0%
How interested are you in buying the edible spoon if it is within your budget?	20 24.7%	0 0.0%	1 1.2%	12 14.8%	47 58.0%	1 1.2%	81 100.0%

Table 4.0: The factors influenced the consumers to buy edible spoon

Treatment / Experience	The availability of the product at any store	The important to save Mother Nature	The price	Total
Which in the following would you consider in buying the edible spoon?	13 16.0%	29 35.8%	39 48.1%	81 100.0%

Table 3.0 and Table 4.0 discuss the readiness of the consumers towards the smart and innovative edible spoon and Factors influenced the consumers to buy an edible spoon. From the statistics, it can be concluded that majority of the respondents (50.6% and 58.0%) were strongly ready to change their spoon into a disposable spoon and buy the edible spoon if it is within their budget. However, 48.1% of the respondents thought that the price may influence their decision in buying the self-degradable spoon in the market and 16.0% have concerned the availability of the product in the market. All in all, it can be generalized that, the respondents were aware and ready to use the smart and innovative edible spoon in their daily lives provided the price of the edible spoon sold in the market is reasonable and affordable.

CONCLUSION

The research findings discussed here reveal simple yet impactful ideas that most of the respondents are aware of the importance of saving mother nature from being polluted by plastic waste. A plastic spoon is, by far available, and the price is much cheaper and economical. The use of the edible spoon is still not widely implemented and practiced in Malaysia but the awareness of using an edible spoon is remarkable. From the statistics, the respondents are aware that the edible spoon is eco-friendly, bio-degradable and should be promoted into the market for nationwide implementation.

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