

Research Methods

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Is plastic packaging helping reduce the food waste in the households?

1. Introduction

In recent years, there has been a rise in the public awareness about the negative impact of the plastic pollution on our planet. A major proportion of the UK's plastic waste is made out of plastic packaging from foods and fresh produce, and sellers are exploring new alternatives to the single-use plastic, including more availability of loose products in supermarkets.

The overall aim of this paper is to see if the consumers have a sustainable mind-set when identifying the effect of plastic packaging for certain fruits and vegetables on reducing the food waste in households. Consumer is the one major player when deciding if a fruit or veg is going to end up in the plate or in the wastage bin. The main reason for throwing away food is because it is not used in time or it is prepared and served too much.

2. Questions posed

1. *Is plastic packaging helping to reduce the amount of fruits and vegetables produce thrown away by households?*

The main purpose of the plastic packaging is to protect the produce from external sources of moisture, heat and odours and to avoid physical damage during transport and storage.

In the case of fresh fruit and vegetables, a lot of the produce have a very short life. For example, cucumber is very fragile and loses a huge amount of moisture if is not wrapped in plastic foil. Grapes and berries are products that are easy prone to damage and various plastic and packaging options are available to protect them from going to waste.

Plastic is a ubiquitous versatile material and is a key component of many products used nowadays. It is cheap and long-lasting and is used as a packaging material to offer safe and hygienic environment for fresh produce.

Our food supply chains today are complex networks with lot of parts playing an important role. Before reaching the consumers, the fresh agricultural produce travels from the fields where is produced to storage facilities where is processed and stored until is needed. Then it is packaged accordingly, transported and distributed to supermarkets and shops. Here, the retailers market the fresh produce before being bought by consumers. To reach the final

consumer, all fruits and vegetables must be protected from bacteria or germs that can spoil them when multiple hands and vehicles assist in the production process. In most cases that's why plastic packaging is used, to act as a barrier against external damaging factors.

In the long food supply chains, when fruits and vegetables are transported from further away, plastic packaging and wrapping plays an important role in protecting from becoming waste.

Most of the fruit is disposed because it is not being used in time and it goes rotten or mouldy. This is a consequence of the large quantities that are often purchased, and that fruit are more perishable if are not stored in optimal conditions.

According to (Laurentiis, et al., 2018) , national studies that have been conducted in EU countries have estimated that 50% of the food waste thrown away by households is generated by fresh fruit and vegetables. In the UK alone, 1.6 million tonnes of food waste produced by households is made out of fresh vegetables and salad and 940,000 of fresh fruit (Wrap, 2018).

In Table 1. is presented the average tonnes of food wasted in 2012 by UK households and the cost worth a year for each product.

Product	Tonnes			Cost £m
	Wasted food (edible parts)	Not used in time	Prepare, cook, serve too much	
Potato	710,000	180,000	120,000	555
Carrot	96,000	43,000	5,000	102
Apple	63,000	40,000	2,000	130
Lettuce	57,000	32,000	9,000	402
Other fresh veg & salad	49,000	30,000	5,000	315
Banana	47,000	44,000	<1,000	67
Onion	47,000	39,000	4,000	69
Tomato	46,000	26,000	2,000	128
Cabbage	43,000	29,000	5,000	65
Cucumber	43,000	25,000	3,000	77
Soft berry fruit	42,000	36,000	<1,000	210
Stone fruit	37,000	33,000	<1,000	140
Orange	29,000	27,000	<1,000	56
Other root veg	29,000	5,000	1,000	57
Melon	24,000	-	-	59
Leafy salad	22,000	13,000	<1,000	64
Other citrus	18,000	17,000	<1,000	52
Pear	18,000	15,000	<1,000	33
Other fresh fruit	13,000	6,000	2,000	200
Pineapple	10,000	-	-	120

Table 1. The most wasted fresh produce items in the UK (Source: Wrap 2018).

Several factors must be taken into account when assessing the food package's impact on the environment, as it must consider the benefits of reduced wastage in the supply chain.

2. Are fruit and vegetables over packaged in plastic wraps?

Not all fruit and veg have equal packaging, and in many cases, there is a valid reason for manufacturers to package their produce.

The increase of packaging in fruits and other fresh produce contributes negatively on the environment.

To some consumers, environmental issues are not so important but for those who are, supermarkets should provide more options for loose fruit and vegetables. It is true, consumers often buy more convenient and if they will only have only one option of packaged produce, they will choose that option.

Apples, for instance can be purchased loose or packed. (Wrap, 2018) states that a study about life cycle impact conducted by ERM for M&S in 2003 found that the waste generated by loose apples would be less than packaged if they are transported in reusable plastic crates. When packaged, most supermarkets sell the apples in polyethylene or polypropylene wrap or in plastic bags. Is this really necessary? (Wijewardane, 2013) affirms that the typical storage life of apple is up to 12 months and 3-4 weeks for the shelf life. Of course, this varies, depending on the ripeness at the time of harvesting.

Most of the fruit and vegetables are washable and come in their own compostable natural wrap. Yet, major retailers choose to pack them in cling film or plastic bags. Vegetables such as onions, carrots and potatoes are over-packaged in non-recyclable bags.

3. Is it possible to eliminate unnecessary plastic packaging without increasing fruit and vegetables waste in home?

Dora and Iacovidou (2019) state that simply removing plastic from fruit and veg packaging is not the most sustainable way, because plastic packaging is beneficial in reducing wastage in some cases. It is up to food producers and retailers to find a way, where possible, to reduce and reuse the plastic.

The development of short supply chains seems to be an ample solution to reduce the amount of plastic used, as short supply chains involve fewer intermediaries between the source of the fruits and vegetables and where these produces are marketed, purchased and consumed.

Conclusion

Plastic packaging can indeed make fruit and veg stay fresh longer, but in the same time it also creates a bad consumer behaviour on harming the environment, by offering the people to store more fresh produce, much of which will end up wasted in the bin.

Convenience is one of the main factors that determine how the consumer chooses and buys its fresh produce. Also, the modern society is designed for the consumer's convenience. Of course, it is convenient, but it really saves customers so much time and effort when shopping?

Any evaluation of fresh fruit and vegetable packaging's impact on the environment must consider the positive benefits of reduced food waste throughout the entire supply chain.

If more plastic is required to be made, one certain thing should be clear, must be kept out in the economy in a circular system, not in the ocean and fields.

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