Design Climate Action Competition

Second Chance

Write-up

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Chosen category: Solutions offered by Nature

For this project we chose to focus on the category 'Solutions offered by nature'. Our proposed innovative solution 'Second Chance' actively contributes to the global transition towards a sustainable and prosperous future. By implementing our solution, urban/city ecosystems will benefit from improved management, leading to a reduction in carbon dioxide emissions. This, in turn, contributes to the fight against climate change and supports the conservation and restoration of city ecosystems.

RESEARCH

Food waste in South Africa

58 million people in South Africa face food insecurity, while one-third of the food produced in South Africa ends up in landfills (de Vries, et al., 2017). This issue of food waste, leads to methane and carbon dioxide emissions, significantly contributing to climate change (Ramada, 2022). Around 70% of food waste in the country is fruits, vegetables, and cereals (de Vries, et al., 2017).

The problem of food waste is not solely about the food that is wasted, but also the energy, water and other resources that are put into producing, packaging, and transporting food items. Water is a scarce resource with South Africa being listed as the 30th driest country on the planet, food wastage equals water wastage (de Vries, et al., 2017). Wasting half a cup of orange juice is equivalent to flushing a toilet 12 times (de Vries, et al., 2017). The same applies to carbon dioxide emissions, with every wasted food item, comes the wasted transport and CO2 emissions that were created.

Notably, a substantial portion (68%) of South Africa's food losses and waste transpires in the early stages of production (de Vries, et al., 2017). This aligns with the South African government's commitment, represented by the Department of Agriculture, Forestry and Fisheries, to halve food waste globally by 2030. The government is now obligated to foster a political and social environment conducive to adopting available ideas.

Based on the research conducted on food waste in South Africa, we have chosen to delve deeper into the specific issue of fruit and vegetable wastage in the country.

Fruit and Veg food waste value chain in South Africa:

Production:

Cultivation and harvesting across all regions lead to **food wastage** due to pests, diseases, adverse weather conditions, poor storage facilities, overproduction, and imperfect produce not meeting cosmetic standards (Food loss and waste: Why food storage is so important, 2022). The country also experiences droughts (de Vries, et al., 2017).

Processing & Packaging:

During this stage, fruits and vegetables undergo sorting, grading, and packaging (DEFF & CSIR, 2021). Additionally, there are processes like washing and treatments for aesthetics or preservation, encompassing juicing, pulp extraction, slicing, drying, canning, and preserving (DEFF & CSIR, 2021). Food wastage at this stage can be attributed to potential product defects, quality control issues,

trimming excess material, discarding unsuitable parts, and concerns related to expiration (DEFF & CSIR, 2021).

Transport:

Transportation from production facilities to distribution centres and wholesale markets involves risks like spoilage from temperature control and damage during transit (DEFF & CSIR, 2021).

Distribution:

Fruits and vegetables are bought and sold in bulk by retailers, supermarkets, restaurants, and other buyers (Food loss and waste: Why food storage is so important, 2022). The distribution may include exportation or supply to food retail stores (DEFF & CSIR, 2021).

Retail/Marketing:

Retail channels, such as supermarkets, grocery stores, farmers' markets, and informal vendors, contribute significantly to food waste due to marketing standards for distributors, expiration dates, overbuying, and consumer behaviour (Food loss and waste: Why food storage is so important, 2022).

Consumption:

Consumer habits, influenced by cultural preferences, dietary restrictions, and individual choices, contribute to food waste (Food loss and waste: Why food storage is so important, 2022).

Waste Management:

Food waste occurs in all the mentioned categories and is managed through recycling and composting (DEFF & CSIR, 2021).

Following additional research into South Africa's fruit and vegetable food waste value chain, it became evident that a significant amount of wastage occurs between distributors and the supermarket retail sector. Consequently, we have decided to delve deeper into understanding the specific food waste issues related to fruits and vegetables within the food retail sector.

The life cycle of fruits and vegetables within South Africa's largest supermarket retail group:

Shoprite, South Africa's largest supermarket retail group, includes the popular Checkers supermarket, grocery store, and convenience store. For this project, we examined the life cycle of fruits and vegetables in a food retail setting using Shoprite as a case study (Holdings, n.d.). Shoprite operates with over 20,000 distributors, and Freshmark serves as Shoprite's fruit and vegetable distributor, procuring 95% of its produce from local South African farmers. Freshmark supplies all Checkers stores with fruits and vegetables (Holdings, n.d.).

When examining food wastage in the life cycle chain, the two primary causes observed in most supermarkets, not just in South Africa, are:

1. Marketing Standards:

Overstocking, visual appearance, and specific characteristics required for food products contribute significantly. Globally, it's estimated that approximately 40% of fruits and vegetables with visual impairments are sorted out by distributors before reaching grocery retailers due to not meeting marketing standards (Ruppenthal, 2021). If these items make it to the grocery store but don't meet the standards, they may be discarded or overlooked for being crooked or too small (Ruppenthal, 2021, p. 14).

2. Expiration Dates:

A substantial amount of food remains unsold after its best-by date, as fewer people tend to buy it. Products declared unsalable due to expiry dates are often still consumable (Ruppenthal, 2021, p. 14).

Between supermarkets and distributors, marketing standards play a significant role. Approximately 40% of visually imperfect fruits and vegetables are sorted out by distributors before reaching grocery retailers because they don't meet the marketing standards set by these supermarkets (Ruppenthal, 2021). In retail stores, 5-7% of food is wasted, primarily due to expiry dates, management practices, and overstocking. While retail stores contribute a relatively small percentage to overall food waste, challenges often arise in the management processes involving supermarkets, distributors, and customers (Sarma, 2023).

Problem statement:

One-third of South Africa's food production ends up in landfills, contributing significantly to methane and carbon dioxide emissions and exacerbating climate change. Fruits, vegetables, and cereals make up around 70% of the country's food waste. Despite supermarkets contributing only 5-7% to overall food waste, the relationship between supermarkets, distributors, and consumers plays a crucial role. Marketing standards set for distributors lead to 40% of visually impaired fruits and vegetables being discarded before reaching supermarkets. In-store waste occurs due to overstocking, risking reputation and potential sales, and unsold items past their best-by date, as fewer people tend to purchase them.

Aim:

In the light of this issue, we aim to explore ways to minimise food waste, particularly fruit and vegetable waste generated by supermarkets by reconsidering how food is labelled and marketed.

Solution:

Our goal is to eliminate supermarkets' marketing standards imposed on distributors, opting to accept all types of fruits and vegetables, regardless of their appearance. Therefore, introducing our proposed solution, "Second Chance," involves a marketing strategy that encourages consumers to buy visually imperfect produce by offering rewards. Additionally, we suggest selling items nearing expiration at a discount through our "Second Chance Discount Unit." Through the implementation of our solution, the aim is to significantly reduce food wastage within the supermarket sector.

- **Overview of the Second Chance Initiative**

As part of our comprehensive 'Second Chance Initiative,' we present two innovative measures aimed at reducing food waste. We advocate for supermarkets to abandon strict marketing standards and embrace these 'ugly fruits.' This is complemented by our 'Second Chance' marketing strategy,

involving labelling the packaging of visually imperfect fruits and vegetables. This encourages customers to make informed choices, earn rewards, and actively contribute to waste reduction, thereby boosting supermarket sales.

Secondly, to minimize in-store food waste associated with expiration dates, we have introduced the 'Second Chance Discount Fruit and Veg Unit.' In this approach, both 'ugly' and 'pretty' packaged fruits and vegetables nearing expiry are categorized and moved to the discount unit. Loose fruits are organized in crates with increasing discounts as the expiration date approaches, creating a sense of urgency and effectively boosting sales. Together, these initiatives under the 'Second Chance Initiative' work harmoniously to combat food waste, promote sustainability, and enhance customer engagement.

- **Reward System:**

Checkers uses membership cards, a common global marketing strategy. It boosts customer engagement, offers incentives, captures customer data, and enhances brand loyalty and satisfaction. Our Second Chance sticker initiative involves giving visually imperfect fruits a second chance by rewarding customers with point Our 'Second Chance' discount initiative involves moving packaged fruits and vegetables that are close to expiry to the display unit. Items are organized in crates with increasing discounts as food gets closer to expiring, creating a sense of urgency and therefore increasing sales when they choose to purchase them. These points accumulate and result in discounts later.

SDG'S we are addressing by implementing these solutions Goal 12,11,13:

Goal 12 is centred around managing the use of resources by promoting sustainable consumption and production patterns (McCarthy, 2015). An example of tackling consumption patterns is reducing waste (McCarthy, 2015). In our case, this will refer to food waste.

Goal 11 refers to sustainability in multiple ways, from environmental to resilience, inclusion, and safety (United Nation, n.d.). Achieving this goal requires collaboration between governments, local authorities, urban planners, civil society, and the private sector to create cities and communities that are liveable, environmentally friendly, socially inclusive, and economically vibrant (United Nation, n.d.). By reducing food waste (goal 12), this will help promote environmentally friendly and resilient cities/communities (goal 11). Including either government, civil society or private sector entities will allow for inclusion and sustainable practices.

Goal 13 emphasizes the need to address climate change, which is causing disruptions by human activity, such as greenhouse gas emissions (United Nations, n.d.). Reducing food waste reduces CO2 and methane emissions, and promotes sustainable cities and communities which, in a combined effort, combats climate change (United Nations, n.d.).

The 3 pillars of sustainability: environmental, social, and economic:

Environmental Sustainability:

Encouraging supermarkets to accept imperfect fruits and vegetables reduces the environmental impact linked to discarding such produce. This lessens overall waste, decreasing the environmental footprint.

The 'Second Chance Discount Fruit and Veg Unit' supports environmental sustainability by reducing in-store food waste. It efficiently uses fruits and vegetables nearing expiration, cutting overall waste and encouraging a more sustainable approach to resource use.

Social Sustainability:

The initiative promotes social sustainability by encouraging informed consumer choices. Through the 'Second Chance' marketing strategy, customers are educated about the value of visually imperfect produce. The rewards system not only engages consumers but also fosters a sense of responsibility and active participation in waste reduction efforts.

Additionally, the approach of organizing fruits in crates with increasing discounts creates a sense of urgency, leading to increased customer engagement and participation in sustainable practices.

Economic Sustainability:

The 'Second Chance Initiative' contributes to economic sustainability by boosting supermarket sales. The acceptance of visually imperfect fruits and the implementation of discounts on items nearing expiration create economic opportunities for supermarkets. Increased sales and reduced waste lead to cost savings and improved economic performance.

The rewards system enhances customer loyalty, contributing to the economic sustainability of supermarkets. The positive economic impact extends to farmers and distributors as well, fostering a more sustainable and resilient supply chain.

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