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An Exploration of Food Waste in the United States

INTRODUCTION

Imagine shopping at the grocery store for a package of spinach, selecting a bag from the first row, and immediately checking the best-by date. If it's coming up soon, you're likely to dig through the other bags until you find one with a better best-by date that gives you more time to finish the spinach. This is common practice for many consumers and it makes sense – who wants to buy produce if it's only “best-by ” next week? Unfortunately, these date-labeling strategies that we base our purchasing decisions on don't accurately represent the safety or quality of goods in grocery stores. So what happens to all the produce, meats, and dairy products that are not purchased but are still perfectly edible? Some is donated, some becomes animal feed, but most goes to waste. The irony in food waste becomes apparent when one looks at how much money and labor is spent on producing food, only for most of it to be thrown out. The multitude of issues surrounding food waste begs the question – how can we turn this problem into a solution? First it is critical to analyze how this problem has emerged, then strategies to prevent and mitigate food waste can be explored. This paper will critically review the norms, policies, and perceptions that have built the system of food waste in the United States, as well as what can be done to deconstruct this system and move towards a more sustainable and humanitarian food system in the United States.

In order to understand the problems surrounding food waste, it is essential to analyze the scope of waste within the food system in the United States. Food waste is described as any edible item that goes unconsumed due to disapproving appearance; therefore, wasting time and labor, as well as diminishing profits (Caitlyn). In the United States, up to one third of total food waste, or 43 billion pounds of wholesome food, is attributed to food retailers including grocery stores (Caitlyn). The United States food system allows for the disposal and waste of vast amounts of food, which also contributes significantly to climate change, as well as negatively impacting natural resources, capital, and humanitarian wellbeing. Marie Mourad, author of “Recycling, recovering and preventing ‘food waste’: competing solutions for food systems sustainability in the United States and France,” claims assimilating to a system that produces food waste in this manner should be deemed “an unnecessary exploitation of land, water, and other resources, in addition to worsening food insecurity” (Mourad). To be able to mitigate food waste in the United States, it is essential to learn how to curb food waste at both consumer and distribution levels.

PROBLEM SOURCES

Looking through the lens of consumer behavior, a large contributing factor to increased food waste in grocery stores is the consumer’s perception of products available for purchase, as consumers often have an idealistic image regarding what constitutes quality food. Their perception of “acceptable” food is often shaped by the appearance, date-labeling, and packaging (Ilona). When foods appear imperfect, the best-by date is too soon, or packaging is damaged, products don't match consumer’s criteria for “acceptable” foods and are deemed as inferior. As a result, a significant source of food waste comes from the un-willingness to purchase or consume suboptimal foods (Ilona). Research highlights that, in addition to the criteria for “acceptable” foods, other factors such as demographics, personality characteristics, and individual waste

agendas also influence consumers' decisions when purchasing suboptimal foods (Ilona). The individuality—upbringing, socioeconomic status, locality to food as well as the type of food, opinion, and preference—of the consumer has a large impact on an individual's decision making process for consuming suboptimal foods (Ilona). Therefore, addressing the concern of food waste within the context of consumer perception will need to look different depending on the different backgrounds of the consumers that are being catered to.

A second contributing factor to food waste in United States grocery stores is the dynamic relationship between consumers, frontline workers, and grocery store strategies for profitability. Frontline workers' decision making processes about whether a product is “acceptable” is heavily influenced by whether or not they perceive a product to be sellable to customers. In other words, many frontline workers consider how consumers may interpret the product's desirability in order to determine the product's salability—as opposed to using a formal or standardized criteria (Caitlyn). From a study titled “Maybe it's still good?,” it was reported that “Workers would rather discard items early than risk customers finding past peak-freshness items on the floor” (Caitlyn). By offering items that may be perceived as “past peak-freshness”, there is an anxiety that customers may become dissatisfied and therefore choose to shop elsewhere, causing the grocery store to lose potential revenue.

Another primary driver of food waste in grocery stores is the influence of the frontline workers' training and education regarding food waste. Frontline workers and managers in grocery stores actively make decisions regarding what is considered food waste when stocking shelves with products that are presented for consumers to buy. This task puts a lot of power into the hands of frontline workers, giving them the ability to make the last call and use their judgment to determine the threshold of what is considered waste. Therefore, it is crucial that

frontline workers receive proper training and education regarding food quality; however, many frontline workers in America seem to lack the formal education that should be deemed necessary (Caitlyn). Many grocery stores have corporate policies that outline standards for the quality of food they permit to be sold in their stores; however, what is considered food waste really boils down to the individual perception and choices of the frontline worker. In the study “Maybe it’s still good?”, frontline workers were asked what they believed the leading causes of food waste in grocery stores were, as well as their personal opinions on in-store waste prevention and reduction strategies. These interviews revealed that the majority of food-waste decisions are personal to the employee, regardless of corporate standards, and lack discernment between quality and safety (Caitlyn). In one of the interviews, a store manager said “I’m sure there’s a written policy. But after [over 20] years I wouldn’t know where that book is even located” (Caitlyn). Because of the lack of guidelines, the decision between saleable and unsellable is more characterized by “common sense” rather than a standard protocol for what is considered “bad” (Caitlyn). One research subject, a frontline worker, even reported that, “until...[a new worker] asked a question or...did something that was wrong and had to be fixed, that the only time [they] really learned...that’s really how supermarkets work” (Caitlyn). This highlights that there is often no formal introduction or education to running a supermarket; instead, frontline workers are left to their own discretion that is not based on policy or regulation.

Since frontline workers are a key component contributing to the food waste issue, they could also play a central role in mitigating food waste. With the right training and education, frontline workers would be able to make informed decisions when considering what products should be considered waste, rather than letting an arbitrary measure of “common sense” and anxiety regarding consumer approval dictate what food is considered wholesome or not.

Utilizing anti-waste programs and processes, implemented at the in-store, corporate, and policy level, frontline workers could become more educated and confident in their ability to determine wholesome food from spoiled food (Caitlyn). If these types of support are implemented, the excess waste produced from frontline workers' personal opinions and anxieties regarding consumer approval may dissipate.

Another critical issue of food waste within grocery stores is the idea that it is easier to waste the food than to find an alternative role for it. This is due to the complexity of management that is associated with organizing donations or transportation to other various alternatives (Caitlyn). Although donations, composting, and repurposing for animal feed or energy are strategies proven to mitigate food waste, grocery stores lack major incentives to add this additional step into the life-cycle of the products they sell. Regardless of the humanitarian relief provided by donations and sustainability achieved by supporting the strategic sourcing of animal feed and clean energy via food waste, these alternatives are not often chosen. Grocery stores have no real economic profit to be made from donations or alternatives; therefore, there isn't an economic incentive to organize or put in the work to carry out second-hand solutions for wholesome foods that have been deemed unsellable in shelves at the grocery store.

A third main driver of food waste within grocery stores is the myths regarding date-labeling. Date-labeling is recognized as a calendar date supplied on a product that informs consumers about the period of time for which the product will be of best quality (USDA). Date-labeling phrases are consistently found on products such as fresh produce, eggs, meat, and dairy products, yet Food Safety and Inspection Services (FSIS) has no formal mandate to date-label food of any sort aside from infant food (USDA). This reveals that date-labeling is voluntarily provided by producers and retailers so long as they provide truthful information as

well as a specific calendar date for items with date-labeling. With that said, there are a few different types of date-labeling such as “best-by,” “sell-by,” and “use-by” which all have slightly different meanings but still function to aid consumer purchasing decisions and store management. What all types of date-labeling have in common is the fact that the dates provided are not synonymous with safety; rather, the purpose of date-labeling is to provide consumers with an estimate of quality, leaving consumers to judge when the product is subject to spoilage (USDA). As a result, date-labeling can cause substantial confusion for consumers when it comes to consuming or purchasing food with date-labeling, and more times than not, consumers will discard wholesome foods based on the date-labeling (USDA). The lack of education and the abundance of misconceptions regarding quality versus safety for foods past the date-label is a huge driver for food waste, since consumers don’t fully understand the purpose behind date-labeling.

SOLUTIONS

In order to combat many of the drivers for food waste in American grocery stores, there are a multitude of solutions that can be implemented. A recent study of markets in the United Kingdom and South Korea investigates the potential benefits of dynamic pricing. Dynamic pricing is defined as incrementally decreasing the price of perishable goods the closer it is to their best-by dates (Helmer). Chung and his research associates concluded that by frequently adjusting perishable food prices, there is a direct correlation to reduced food waste and increased profits (Chung). Their paper established the relationship between consumer choice and date-labeling is that consumers are more likely to buy the product with the furthest best-by date for reasons such as safety concern and cost benefit (Chung). But after studying the outcomes of dynamic pricing, Chung and his team found that with this strategy, retailers have the power to

sway consumer purchasing habits (Chung). In doing this, grocery retailers in the UK and South Korea experienced an increase in sales of products with shorter remaining shelf-life (Chung). They also identified that retailers engaging with dynamic pricing were able to simultaneously redirect consumer focus to thoughtful consumption planning in addition to limiting food waste (Chung). Dynamic pricing has the ability to change the nature of human consumption and encourage waste-limiting mindsets, allowing for shifts in demand and overall waste reduction.

The effect of dynamic pricing within grocery stores generated profitable benefits for retailers and encouraged more need-driven purchasing. With this being said, Chung and his associates' research provides proof of success for the legitimacy of dynamic pricing within grocery stores—especially for products that have a short shelf-life. Although this article only focused on measurable results in the United Kingdom and South Korea, the study proved the feasibility of dynamic pricing that could be applicable to grocery stores in other developed countries, like the United States. The research also showcases a blueprint for how grocery stores in the United States can incorporate dynamic pricing into their pricing policies as a means to mitigate food waste, encourage consumers to mindfully shop, and to increase their profitability.

In another case study reported by Jodi Helmer, a start-up company that piloted their dynamic pricing strategy in multiple grocery stores in Europe had major success with implementing dynamic pricing as a pricing strategy to mitigate food waste. Helmer reports that, “the results from the stores are encouraging as a 32.4% reduction in waste and 6.3% increase in profits was experienced,” providing more support that dynamic pricing really does offer promising benefits to grocery stores who chose to implement it (Helmer). Although dynamic pricing evidently works in a positive manner, Helmer honestly discloses in her report that implementing dynamic pricing technologies in grocery stores have more shortcomings than one

would expect. One of the biggest barriers is barcodes. What is meant by this is that current barcodes on products tell grocery store employees how much product they have in store, but they cannot track various date-labeling needed to implement dynamic pricing (Helmer). In order to fix this dilemma, grocery stores must transition from the universal product code (UPC) to a GS1 barcode which contains extended product detail (Helmer). The challenge with this is that GS1 barcodes need to be implemented at the manufacturing level, which adds an additional layer of buy-in (Helmer). Although the additional layer of buy-in is not ideal for grocery stores, dynamic pricing has been proven to positively affect profit and limit food waste at profound levels, and there is something to be learned from the successes dynamic pricing startups have had in Europe. Potentially exploring dynamic pricing for specific items, such as chicken, that guarantee higher profits and reduced food waste, could be a successful way to introduce dynamic pricing into US grocery stores that are willing to trial the AI technology (Helmer).

Establishing dynamic pricing strategies in the United States has significant potential to alter the style in which retailers present products as well as shift consumer mindsets while shopping. Both the changes in retail structure and consumer perspective offer tangible solutions to mitigating food waste at the grocery store level within the United States. Evidently grocery stores and grocery shopping will look different for both retailers and consumers in different countries; however, the principle of dynamic pricing remains the same. The barriers to entry with dynamic pricing will prove to be obstacles that must be tackled, yet there are strategies to work around these barriers. The cost of an additional buy-in layer might not be financially feasible for all grocery stores across the nation; however, implementing dynamic pricing for limited types of products in the beginning may prove to be a gateway into fully implementing dynamic pricing.

Nonetheless, experimentation with dynamic pricing should be deemed a valuable tool American grocers have in the quest to limit food waste.

In addition to what can be altered in grocery stores, there are many other efforts outside of grocery store management that aim to mitigate food waste within the United States, such as work being done by American owned businesses. One example of a business working to mitigate food waste in the United States is a public benefit corporation known as “Imperfect Foods”. Imperfect Foods’ mission is to eliminate food waste by redesigning the current food system into a new version that redefines what wholesome foods look like. They reduce food waste by offering a catering system that delivers “imperfect” groceries that have been rejected or discarded at grocery stores to members (Imperfect Foods). Customers choosing to shop via Imperfect Foods don’t have to pay for the service as memberships are free, which is a key feature of Imperfect Foods, as it promotes accessibility and inclusivity. The inclusive nature of their business models decreases the barriers for entry and further spreads their mission, bringing them one step closer to redesigning the wasteful food system we have today.

Imperfect Foods truly caters to customers’ preferences while still managing to successfully address the problems associated with food waste. They provide services that are convenient, personalized, and exclusive to the customer, all while ensuring sustainability within their sourcing, delivery, and waste management (Imperfect Foods). While catering to their customers, Imperfect Foods still puts sustainability first by taking many steps to ensure that their services are sustainably sound. They take initiative actions like partnering with farmers to save produce that wouldn’t have made it to shelves in grocery stores—these actions reduce food waste and provide farmers with lost revenue (Imperfect Foods). Imperfect Foods also ensures that their animal products are cage-free, pasture-raised, and grass-fed to ensure animal welfare and to

support emission reductions and responsible land management (Impossible Foods). In order to cut transportation emissions, Imperfect Foods delivers to customers in proximity on the same day each week in one trip with one van—limiting the amount of emissions that otherwise would have been released from alternative delivery options (Imperfect Foods). Imperfect Foods manages produced waste sustainably by only packaging orders in “100% recycled boxes” and recollecting packaging to reuse or recycle (Imperfect Foods). Finally, Imperfect Foods also takes the initiative to donate the food they don’t sell to institutions that distribute food to those in need (Imperfect Foods). So not only does this case study showcase a great solution to the issue of food waste, but also helps promote the need for sustainable practices in every aspect of their company, providing an ideal model for other companies with similar missions to learn from.

Imperfect Foods pinpoints one of many solutions for how food systems in the United States can become more resilient and responsibly managed as they highlight how feasible it is to reduce food waste, save water, cut emissions, and give back to the community. Although Imperfect Foods is a smaller scale example, the company has been successful due to individual support by consumers. As their company continues to grow, Imperfect Foods inspires more and more consumers to be environmentally conscious with their food choices. Hopefully as the corporation grows, suppliers and consumers will view Imperfect Foods a model for a better food system that aligns with practices that limit food waste, promote environmental sustainability, and foster humanitarian relief.

CONCLUSION

After considering the dynamic and growing conflict of food waste in the United States, it becomes evident that there are many moving pieces that are needed to solve the puzzle. First and foremost, understanding that consumer preferences for foods, as well as the variety of different

perceptions different consumers hold, needs to be acknowledged as part of the problem and will be essential to finding a solution to food waste. Consumers first must understand the difference between wholesome food and spoiled food, as well as become properly informed about date-labeling. Although perceptions and preferences are hard to shift, solutions like dynamic pricing can be key to persuading consumers to leave their perceptions and preferences behind as dynamic pricing offers an economic relief for consumers willing to purchase wholesome food past top-tier freshness. Another piece of the puzzle is the lack of education provided to frontline workers who dictate what food gets wasted. Frontline workers must also be catered towards as a large portion of food waste may be prevented if frontline workers became properly informed and trained by way of in-store, corporate, and policy level anti-waste programs. Lastly, promoting business models similar to Imperfect Foods, where food waste mitigation and sustainability are at the heart of their mission, can lead us to a more sustainable food system. It's hard to say how probable any of these solutions will be at redesigning the current food system given the nature of capitalism and existing norms; however, what this research paper highlights is that solutions do exist and can be implemented. There is a lot that must happen, including big cultural shifts and a betrayal of the capitalist business model that much of the American food system has succumbed to, but there are loopholes and actions that can be taken in order to mitigate food waste within the United States. If more and more people continue to keep sustainability and the health of our planet at the core of their values, it will be possible to redesign a full circle food system that prioritizes keeping food waste at a minimum.

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