

INCORPORATING VISUAL ARTS INTO ANTI-FOOD WASTE CAMPAIGNS: EVIDENCE-BASED ARGUMENTATION

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Authors' Contributions

Prof. Chukwuemeka Nwigwe conceptualized the study, developed the theoretical framework, conducted the literature review, performed the analysis of visual artworks, and drafted the manuscript. He also provided the photographic documentation for Figures 4 and 5.

Onyinye Mary Edeh assisted in the collection and analysis of visual materials, provided photographic documentation for Figure 1, and contributed to the revision and editing of the manuscript. Both authors reviewed and approved the final manuscript for submission.

Abstract

Food waste is a pervasive global issue with significant environmental, economic and social implications. Technological inadequacies, lack of awareness and behavioural factors remain a major challenge in this area, particularly in parts of Africa, which have a history of frequent power failures and other issues, including poor packaging, inadequate personnel training, underdeveloped transport systems, insufficient cold storage and insecurity. Some of these problems can be addressed through more effective and inclusive anti-food waste campaigns. This paper argues for the incorporation of visual arts into existing anti-food waste strategies, leveraging the potential of visual communication to promote positive behavioural change and foster individual and community social responsibility. Through a review of existing literature and case studies, this research demonstrates the potential of visual arts to raise awareness, evoke emotions and inspire action. By examining artworks, designs and relevant literature, this paper provides evidence-based argumentation for integrating visual arts into anti-food waste campaigns, highlighting the social responsibility of artists and designers in this context. The findings of this research have important implications for policymakers, practitioners and scholars seeking innovative solutions to the persistent food waste issue in Nigeria and beyond.

Keywords: Zero food waste, Visual communication, Social-cultural issues, Awareness campaign, Art intervention, Waste reduction, Visual learning.

Introduction

Food waste is a pervasive issue worldwide, with significant environmental, economic, and social implications. In a report on the state of food security and nutrition worldwide by FAO, IFAD, UNICEF, WFP, and WHO (2020), food loss is mentioned 164 times and food waste 139 times. In Nigeria, 40% of total food production is lost and/or wasted annually, reveals the report. Thus, reducing food waste (from farm to table), promoting sustainable diets and supporting small-scale farmers appear as parts of the key principles of sustainable food systems. Indeed, reducing food loss and waste (FLW) is one of the critical pillars of building a smart food system (World Bank, 2020). Unfortunately, the problem of food waste has persisted over the years despite individual, group, and government efforts to curb the trend. Despite decades of intervention, Nigeria's food waste crisis remains unresolved, with nearly half of all food production lost annually. Current approaches rely heavily on technological and policy solutions, yet behavioral change remains elusive, particularly among populations with limited literacy. Visual artists possess unique capabilities to transcend language barriers, evoke emotional responses, and make abstract statistics tangible. Yet in Nigeria's anti-food waste discourse, artistic voices have been conspicuously absent. Posters, photography, installations, and graphic design have the potential to complement existing interventions, reaching audiences that traditional educational materials cannot.

A comprehensive review of existing literature on food waste reveals a noticeable imbalance in perspectives and approaches to addressing food waste. The predominant perspectives and approaches have been far from the visual arts. The glaring omission of artistic perspectives to the issue in question denies the fact that the food waste phenomenon is complex and thus demands a multidimensional approach. Specifically, the potential of visual art as a tool in the fight against food waste in Nigeria has been largely overlooked, and this creates a

significant knowledge gap. The purpose of this paper is to demonstrate, using sample works, the potential of visual arts as an effective tool in addressing food waste, especially in Nigeria.

Specifically, the paper aims to highlight how visual arts can raise awareness, evoke emotions, and inspire behavioural change toward sustainable food practices. It is imperative that the identified gap be filled, given the profound impact that art can have on shaping cultural attitudes, influencing behavior, and inspiring social change. By examining the issue of food waste through the lens of visual art, this paper aims to provide a fresh and innovative perspective on this critical issue.

Literature Review

Food waste has been a pressing concern for many, prompting numerous studies on consumer behaviour, decision-making and food waste in various contexts. Understanding consumer behaviour and decision-making is crucial in informing strategies to reduce food waste. Moreover, a multidisciplinary approach, considering economic, psychological and environmental factors, is necessary to address food waste and promote sustainable food behaviours. Garcia-Garcia et al. (2017) proposed a methodology for the sustainable management of food waste, incorporating environmental and social considerations into the decision-making process. Their study categorised food waste, linked different types to appropriate waste management alternatives, and developed a Food Waste Management Decision Tree, illustrated through two UK food industry case studies.

Vermeir and Roose (2020), in their article “Visual design cues impacting food choice: A review and future research agenda”, provide insights that are highly relevant to this study. Although the article does not directly address food waste, its extensive list of references (374 in total) includes numerous materials that provide valuable insights into the potential of visual art in anti-food waste campaigns. Peng and Jemmott (2018), one of the cited works, explore the concept of food photography and how this growing trend has become a "feast for the eyes".

Aburime (2023) provides a comprehensive review of the current state of food waste and loss in Nigeria, identifying causes, impacts, and efforts to reduce the problem. The author cites several causes, including poor packaging, inadequate training of personnel, poor food transport systems, and insufficient cold storage, exacerbated by adverse weather conditions and climate change, insecurity, and low-quality seeds and fertilisers, all of which contribute to poverty. Haruna et al. (2023) discuss the implications of food waste on food security and sustainable agriculture in Nigeria, identifying inadequate storage facilities as one of the primary causes of food waste in Nigeria.

Ogundele (2022) conducted an empirical review of post-harvest losses and food security in Nigeria, stating that reducing post-harvest losses by half by 2025 would require infrastructural development, improved harvesting practices, and value addition. One would learn from the text that despite numerous attempts by donors, governments, and technical assistance agencies to reduce post-harvest losses in developing countries, losses remain high due to significant measurement difficulties. One issue is that while engineers have successfully developed innovations in drying and storage, these innovations are often not adopted by small-scale farmers. This raises a moral question: why have farmers failed to adopt innovations intended to benefit them? Arguably, one answer is ignorance. This highlights the need for a more inclusive and multidimensional approach to food loss, incorporating the visual arts. Ogundele (2022) identifies limited knowledge of food loss prevention and reduction techniques as a key emerging problem, emphasizing the importance of farmer education on improving post-harvest management and highlighting the relevance of visual arts in this context. Many rural farmers may be unable to read or write, but they can understand and recognise educational images or visuals, making visual arts a valuable tool for promoting knowledge and behaviour change.

Aburime (2023) notes that the Nigeria Digital Agriculture Strategy, introduced in 2020, aims to utilise digital innovations and technologies to reduce food loss and waste by 50%. Notably, this strategy relies on information and communication technologies (ICTs) to enhance productivity and efficiency in agricultural activities, resonating with the purpose of fine arts and graphic arts. The author identifies the Zero-energy cooling method as a means to prevent losses at the post-harvest stage, which is reportedly the major stage of food loss in Nigeria. However, this method faces the challenge of low awareness among farmers. This issue, along with other underutilised "smart modern technologies" such as digital smart tools, drones, and artificial intelligence, can be thematically engaged by visual artists and designers through their works. Studies on visual design and food waste reveal important connections. Research suggests that packaging design influences consumer expectations and willingness to purchase (Rebollar et al., 2012), and the visibility of products through packaging affects consumer perceptions and purchase behaviour (Simmonds & Spence, 2017). Van Giesen and de Hooge's (2019) study argues that emphasizing authenticity and sustainability can reduce food waste by increasing acceptance of agricultural products that do not meet traditional cosmetic or quality standards.

Research on anthropomorphism shows that attributing human characteristics to non-human entities can create emotional connections with consumers, encouraging them to empathise with "ugly" or imperfect produce. Anthropomorphic package shapes can appeal to consumers and influence their behaviour (De Bondt et al., 2018), and anthropomorphism can promote the acceptance of "ugly" or imperfect food, reducing food waste (Shao et al., 2020). Studies examining food imagery, media, and food waste (McDonnell, 2016; Taylor & Keating, 2018; Peng & Jemmott, 2018) show that the proliferation of food imagery in digital media can perpetuate conspicuous consumption and contribute to food waste, while visual trends in food imagery can influence consumer perceptions and behaviours related to food.

Diogu (2002) observed that using artistic images in teaching basic mathematics in nursery school has a significant impact on cognitive achievements. The experiment revealed that pupils exposed to familiar pictures performed better than those shown abstract symbols. The artistic images stimulated interest in the subject, explaining why educationists, educators, and policymakers encourage the use of images, videos, and audio recordings as instructional materials. Therefore, in anti-food waste campaigns, visual images produced through artistic practices should play a prominent role.

Psychological, Socio-cultural and Behavioural Factors and Food Waste

The negative inclination towards food waste knowledge is rooted in psychological factors. When individuals are aware of the impacts of food waste and feel concerned about its consequences, they are more likely to take action to reduce waste. Veselá, Králiková, and Kubíčková (2023) found that the price of food has a relatively minor impact on the level of food waste, whereas food characteristics and planning play a more significant role. Notably, the study found that "consumers' attitudes and awareness of food waste reduce food losses," which is relevant to the current discussion on the role of visual arts in discouraging food waste. Socio-cultural influences also shape food waste behaviours in Nigeria. For example, in some Nigerian cultures, preparing excess food is seen as a sign of hospitality. However, when guests do not arrive, this excess food can lead to potential waste. Based on the review of literature, the concept of food photography and how this growing trend has become a "feast for the eyes" would ultimately serve as a deterrent to food waste if explored under the context of anti-food waste campaign.

Theoretical Framework

This study draws on three theoretical perspectives to explain how visual arts can influence food waste behavior. The first is the Theory of Planned Behaviour (TPB) by Ajzen (2020), which posits that attitudes, subjective norms, and perceived behavioral control shape human actions. These factors determine behavioral intentions, which strongly predict actual behavior. Since TPB has been widely validated, interventions that target attitudes, social norms, and perceived control can promote behavior change, including in food waste reduction (Ajzen, 2020). Visual arts can support these components by shaping positive attitudes, creating visible social expectations, and strengthening confidence through clear messages. In addition, Dual Coding Theory helps explain why visual communication is effective. Sadoski et al. (1991) argue that people process information through verbal and visual systems. When both systems are activated, learning and memory improve. This dual processing makes visual arts especially valuable for explaining complex ideas and reaching audiences with diverse literacy levels.

Furthermore, Social Cognitive Theory highlights the role of observational learning. De la Fuente et al. (2023) note that people learn by watching others' behaviors and outcomes. Visual arts can model positive food practices and show practical steps for reducing waste, helping translate awareness into action. Together, these theories clarify why visual arts can meaningfully support food waste reduction. They show how visual communication can shape attitudes, strengthen social expectations, and encourage practical action in ways that traditional text-based approaches may not fully achieve.

Materials and Methods

This paper is based primarily on secondary data, obtained through an in-depth review of existing literature on food waste and related concepts. This comprehensive review provided the necessary informational foundation for the arguments presented herein. Online databases and articles, particularly those accessed through Google Scholar, were utilized to gather key

data. The only primary data included in this paper are a few field photographs taken at Nsukka in Enugu State, Nigeria. Other visuals sourced online were incorporated to enhance the contextual relevance of the paper's central argument that visual arts can serve as a valuable tool for mitigating food waste among Nigerians. The collected data were subjected to descriptive and formal analysis, aimed at identifying patterns of scholarly intervention on the subject and relevant artistic trends. The approach adopted in this paper is also analytical and historical, providing a nuanced understanding of the complex issues surrounding food waste.

Analysis

There are quite a few art works that address food waste. However, only one work that directly deals with food waste was encountered through a secondary source in the course of writing this paper, though there could be more. To augment for the insufficiency, related works have been added to enrich the key argument of the paper.



Figure 1: Food Dump site for restaurants in the neighborhood.
Photo credit: Onyinye Edeh.

A good visual reference can be drawn from refuse dumps where leftover food and excess provisions are discarded by food vendors and restaurants in the neighborhood (Figure 1). Seen through an artistic lens, these dumps present layered compositions that highlight the scale of waste in a striking way. When documented and reworked into posters, billboards, or other graphic formats, such images can function as everyday reminders of what is often overlooked. They shift the attention from waste as something to be hidden away, to waste as a subject that can speak visually about patterns of consumption. In doing so, artists are able to use familiar tools of communication like images, layouts, typography, and placement, to transform what appears ordinary into material that informs public awareness.



Figure 2: Scarecrows in a rice paddy in Japan. Photo in Public Domain,
<https://commons.wikimedia.org/w/index.php?curid=140870>

Food waste can be tackled at the pre-harvest stage, at the farmland, where certain wild animals usually cause significant economic losses for farmers. In rice paddies, for instance,

several farmers install scarecrows to scare rice-eating birds and ensure food security. Such pre-harvest anti-food waste strategy was popular in ancient Japan, where farmers would create elaborate scarecrows, known as "kakashi," to guard their rice paddies (See Figure 2). By combining their creative skills with an understanding of visual perception and behaviour, Nigerian sculptors can design and build scarecrows that are both effective and visually striking. Again, while artists might not be the primary builders of granaries used for food storage, sculptors can certainly contribute to the design, construction, and conceptualization of these structures.

Another set of artists who would contribute immensely against food waste are graphic artists. They create stickers, banners, sign writings and engage in digital arts involving photography.



Figure 3: Zero Waste Sticker. Credit: Shutter Stock
<https://www.shutterstock.com/search/zero-waste-sticker>

Figure 3 showcases a thought-provoking "Zero Waste Sticker" that embodies the creative approach to tackling the problem of waste generation. The visual representation serves

as a potent reminder of the importance of responsible food management. By leveraging art and design, individuals and communities can raise awareness about the pressing issue of food waste and promote sustainable practices. Visual arts have indeed limitless potential to inspire change and promote sustainability in food management through their works. Artists can leverage their skills to create thought-provoking works that highlight the importance of reducing food waste. For instance, a painter could depict the biblical story of Jesus instructing his disciples to gather leftover food (John 6:12), using familiar foods to contextualize the message. This artwork would resonate with Christians and emphasize Jesus' anti-food waste disposition.

Visual Artists, Waste and Other Social Issues

Although specific Nigerian visual artists addressing food waste are limited, several artists and initiatives explore related themes. The "Waste to Art" initiative by Wecyclers encouraged artists to work with recycled waste, including food packaging and organic materials. Odoh et al. (2014) reviewed the "Art is Everywhere" project, which used waste and found objects as creative resources. El Anatsui creates powerful works from discarded bottle tops and derelict materials, while Dilomprizulike, the "Junkman from Africa," uses wastes as compositional tools. Similarly, Song Dong's installation "Waste Not" (2005) critiques excess and consumerism through over 10,000 collected household waste items



Figure 4: A sign promoting proper waste disposal by the #Don't Litter Initiative.
Photo credit: Chukwuemeka Nwigwe.

Prominently displayed at the entrance of the University of Nigeria, Nsukka, is a sign board bearing the imperative message, "DISPOSE WASTES PROPERLY." (Figure 4). It is a testament to the role of artists in raising awareness about proper waste disposal. While this image may not explicitly represent an anti-food waste campaign strategy, it effectively demonstrates the influential role of art in shaping public behavior and promoting environmental responsibility. This sign encourages viewers to adopt more mindful and sustainable practices in so far as waste is concerned.

Figure 5 showcases a billboard advert containing crucial COVID-19 advisory information. This visual reminder serves as a powerful tool in the fight against the pandemic, promoting public awareness and encouraging responsible behavior. In the spirit of artistic expression and social responsibility, this advert legend embodies the idea that art can be a potent catalyst for positive change.



Figure 5. A billboard with COVID-19 Advisory and a Call to Action.
Photo Credit: Chukwuemeka Nwigwe

Similar to Figure 2, Figure 5 demonstrates the potential for a visually impactful poster. By adapting this design approach, a creator could develop an anti-food waste poster, replacing the COVID-19 theme with a message addressing the pressing issue of food waste. The role of artists in addressing food waste cannot be overstated. As creative visionaries, artists possess the power to shape public perception and influence behaviour. By designing engaging and thought-provoking campaigns, artists can raise awareness about the issue of food waste, highlighting its environmental, social, and economic impacts. Moreover, artists can collaborate with policymakers, activists, and community leaders to develop effective strategies for reducing food waste.

This paper is therefore a call to action to the public, institutions and the government to start taking serious thoughts on engaging artists who are competent and interested in producing works that address food security issues, especially food waste. Based on the review of literature, it is evident that the concept of food photography and how this growing trend has become a "feast for the eyes" would ultimately serve as a deterrent to food waste if explored

under the context of anti-food waste campaign. Visual art can be deployed in anti-food waste campaigns through various mediums such as painting, photography, and graphic design to create eye-catching and thought-provoking visuals. By leveraging the creative potential of visual arts, anti-food waste campaigns can engage audiences, inspire behavioral change, and promote a culture of sustainability.

Discussion of Findings

Our findings show that visual arts interventions can raise awareness and encourage people to participate individually and as a community to reduce food waste and its wrongful disposal. This aligns with existing research showing that creative or participatory campaigns can motivate individuals to change their behavior (Hebrok & Boks, 2017). Such interventions often lead to higher awareness and small improvements in food waste practices. However, studies note that these changes are frequently short-lived, as many people return to previous habits over time (Roosen et al., 2018). Curtis et al. (2012) explain that community-based designs may make these effects more durable because involving people directly builds a stronger sense of ownership and responsibility. When individuals feel connected to the message and see their contribution reflected in the intervention, they are more likely to sustain the new behavior (Galafassi et al., 2018). These observations align with Social Cognitive Theory, which emphasizes that people learn and maintain behaviors through active participation and by observing positive role models within their communities (de la Fuente et al., 2023). While creative and emotionally engaging interventions appear promising, long-term research is still needed to understand how their effects can be maintained (Wakefield & Axon, 2020).

The Theory of Planned Behavior (TPB) provides a useful lens for interpreting these findings (Ajzen, 2020). The TPB explains that attitudes, social norms, and perceived behavioral control shape people's intentions and actions. When these elements shift positively, individuals

are more likely to adopt and maintain new behaviors. Strengthening positive attitudes and social expectations can support food waste reduction (Wakefield & Axon, 2020). When individuals see the importance of reducing waste and observe others engaging in similar actions, they feel more motivated to change, creating a supportive environment that encourages long-term behavior.

Our results suggest that visual arts interventions contribute directly to these processes. They make food waste issues more visible and emotionally meaningful, helping people recognize the importance of the problem (O'Neill & Nicholson-Cole, 2009). Dual Coding Theory shows that combining images with verbal messages enhances comprehension and memory more effectively than text alone (Sadoski et al., 1991). This is particularly relevant in Nigeria, where varying literacy levels may limit the impact of text-based materials. Clear and relatable messages increase confidence in the ability to act (Houts et al., 2006). When visual arts present concrete examples, they strengthen perceived behavioral control by showing that actions are achievable. Together, the TPB and complementary theories of visual communication and social learning offer a strong foundation for guiding food waste reduction strategies, highlighting how visual arts interventions can inspire awareness and support positive change.

Conclusion and Recommendations

This research demonstrates the potential of visual arts as a highly effective strategy for promoting behavioral change and fostering individual and community social responsibility towards food waste. Through a critical analysis of existing literature and case studies, our findings show that visual arts can raise awareness about food waste, evoke emotions and empathy, and inspire action and behavioral change. The implications of this research suggest that the integration of visual arts into anti-food waste campaigns can enhance the effectiveness of existing campaigns and foster community engagement. Therefore, visual artists and

designers should play their social responsibility towards Nigerians by joining the fight against food waste, using creativity to drive desired change.

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