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From Surplus to Solution: How Tech-Driven Social Enterprises Are Rethinking Food Waste in Malaysia

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Abstract
Purpose: This study explores how technology-enabled social enterprises in Malaysia are addressing the dual challenge of food waste and food insecurity by embedding Islamic ethical values and innovative business models.
Design/methodology/approach: A qualitative study approach was adopted. Data was collected through document analysis and interviews. Thematic analysis was conducted using the Shared Value framework and the Business Model Canvas to examine strategic, technological, and ethical dimensions.
Findings: The study found that all three enterprises share a common goal of reducing food waste through digital innovation; they differ in their approaches to technological integration, stakeholder engagement, and scalability. Islamic ethical principles such as *maslahah, adl, amanah,* and *ihsan* were found to be embedded in their missions, influencing both operational decisions and impact narratives.
Research limitations/implications: This study focuses on a limited number of social enterprises, which may restrict the generalizability of the findings to the broader sector. Additionally, the reliance on publicly accessible data and interviews may not capture all internal decision-making processes. Future research should expand the scope to include a larger and more diverse sample of social enterprises, potentially across different geographic regions, and adopt longitudinal methods to explore organisational change over time.
Practical implications: The study offers actionable insights for policymakers, corporate companies with a CSR division, NGOs, and social enterprise incubators. It emphasizes the importance of ethical digital transformation and ecosystem collaboration in developing scalable food waste interventions.
Originality/value: This research contributes to the intersection of social enterprise, Islamic ethics, and digital innovation.

Keywords: Social Enterprises, Food Waste Management, Digital Transformation, Islamic Ethics, Sustainable Food Systems, Qualitative Method

Introduction

One-third of the world is facing food waste issues due to an excess of production, but at the same time, some parts of the world face the issue of food insecurity and hunger. Malaysia generates 17,000 tonnes of food waste daily, which is still edible (Zero Waste Malaysia, 2022) and burden the environment. This results from the increased volume of waste caused by population growth, changing lifestyles, and rapid urban development. An estimated fraction of

the food produced is lost or wasted at various stages of the supply chain, contributing not only to lost economic value but also to adverse environmental impacts, such as methane emissions and resource reduction. Referring to Qur'an Surah Al-A'raf (7:31), which advises, *"Eat and drink, but do not waste. Indeed, He does not like those who waste."* This verse encourages Muslims to embrace moderation (*wasatiyyah*) and discourages excess (*israf*), which is related to the importance of not wasting food and fair distribution as an ethical foundation in a society which are majority Muslim.

The inefficiency in handling food waste affects the social, ecological, and economic risks, demanding integrated solutions (Kunchamboo Vimala & Cheah Stephanie, 2022) and if the existing condition continues, Malaysia might reach its landfill capacity by 2050 (International Trade Administration, 2024). Beyond the environmental impact, food waste represents a deeper issue of inefficiencies in the national food supply chain and raises ethical concerns among the B40 communities (Irdina Nurfatihah, 2024). In Malaysia, the conflict against food waste has evolved into a joint effort involving the government, corporations, and social enterprises, each serving complementary responsibilities to bring about significant change. The government formulates the policy framework through legislation such as the Solid Waste and Public Cleansing Management Act and initiatives like the Reduce, Reuse, and Recycle (3Rs) program. Taylor University, a private school, worked with the Food Aid Foundation (FAD) to make the supply chain more efficient and help with food donation programs by creating a meal package called Nourish-U (Chong Li Choo, 2024).

In Malaysia, social enterprises are known as intermediaries in bridging the gap between the government and corporate sectors by starting community-based projects, leveraging digital tools, and getting grassroots networks going to make sure that extra food goes to the people who need it most (Abdul Halim et al., 2025). By efficiently redistributing excess food, these organizations not only mitigate waste but also generate profound societal value, transforming the abundance of food in one community into an opportunity for another. Their impact extends beyond resource allocation, fostering employment opportunities, enhancing nutritional access, and reinforcing social unity by ensuring that no edible food goes to waste while families in need receive dignified, nourishing meals (Arsat et al., 2025).

Several social enterprises in food waste integrate technologies in their business model through digital innovation, creating digital platforms that revolutionize how surplus food is rescued and redistributed (Nordin Siti Nurulhuda et al., 2024). They used a system that coordinates the supply chain with technology to scale up compared to the traditional approach (Kunchamboo Vimala & Cheah Stephanie, 2022). Thus, many social enterprises embrace smart waste technologies (Olawade et al., 2024) for adaptability, innovation, and resolving the challenges of food waste and resource inequality.

Previous research has comprehended Islamic values and social entrepreneurship (Azan & Sarif, 2017). But the integration of technologies expanded during the COVID-19 pandemic (Adib et al., 2022). Strategic opportunity of *maqasid al-shariah* (objectives of Islamic law) into AI-driven business models is the combination of the interaction between *Naqli* (revealed knowledge) and *Aqli* (rational reasoning), with modern tools such as the Business Model Canvas (BMC) and the Shared Value Framework, in developing ethical and inclusive enterprise models, is required to ensure the models are suitable for the community and market. Islamic principles such as *adl* (justice), *ihsan* (excellence), *amanah* (trust), and *maslahah* (public good) closely align with the objectives of shared value creation, emphasising

profitability alongside moral accountability, community empowerment, and sustainable development of the social enterprise.

This study seeks to address the gap by analysing the integration of Islamic values and digital technologies in Malaysian social enterprise strategies to mitigate food waste by employing the Business Model Canvas and the Shared Value Framework as analytical tools. It is also within the context of Malaysia's National Entrepreneurship Policy 2030 (NEP2030) to have an inclusive digital ecosystem that integrates with sustainable social entrepreneurship (MEDAC, 2020) and Social Enterprise Masterplan 2030 (SEMy2030) focuses on the integration of hybrid business models and Islamic value-based innovation (MEDAC, 2022). This study not only contributes to the literature on food waste and digital innovation but also provides a pathway to embed Islamic values into tech-driven social enterprise models to optimize operations, reduce environmental harm, and align with both national blueprints for socio-economic transformation, servicing the underserved communities.

Literature Review

Food Waste in Malaysia: A Systemic Challenge

Food waste represents a complicated crisis that affects both the environment and society. Every day, Malaysians throw away 39,078 tonnes of solid waste, which is equivalent to 1.17kg per person, and food waste represents the highest composition of 30.6 percent (Zainal Fatimah, 2024). One way that the government introduces to reduce waste is to reduce, reuse, and recycle (3R), as the government considers sustainable solutions to handle the growing problem. The urgency of the issue calls for sustainable redistribution models that address waste while promoting equity and inclusion in food systems. A study done by Kunchamboo Vimala & Cheah Stephanie (2022) reveals that digital platforms assist in matching surplus food to demand points, streamlining food sharing initiatives, and enabling effective communication and transparency among stakeholders. This is one solution to reduce food waste to assist B40 communities and urban poor populations. This crisis requires both technological enablers and social enterprise to work together. But addressing food waste is not just a technical solution but also involves incorporating new models of value creation that integrate sustainability, equity, and ethical responsibility.

Technology and Digital Innovation in Waste Management

Digital platforms and artificial intelligence (AI) are used in many industries to monitor their operation, control, and handle logistics (Toorajipour et al., 2021; Yuan et al., 2024). Social enterprises related to food waste act as key intermediaries in redistributing surplus food, educating communities, and innovating alternative supply chains as they engage with collaborators such as corporate companies, local farmers, hypermarkets, and community organizations (Doherty et al., 2020). In Malaysia, a growing number of non-government organizations (NGOs) and social enterprises started the venture, operating digitally and gradually increasing their digital presence, while others have struggled to sustain operations. The early effort relied on the WhatsApp system (Nordin Siti Nurulhuda et al., 2024) before being enhanced to app and web platforms for food distribution. However, the uptake of such technologies among social enterprises remains limited due to cost, skill gaps, and infrastructural constraints, which slow down the adoption. Thus, growth strategies by some social enterprises were successful when they managed to secure funding from grants, venture capital, financing, and partnerships, which they integrated with mentoring and joining the accelerator program (Baskaran et al., 2019). These initiatives help social enterprises to drive

sustainable changes, blend in with technological innovation, without undermining the social mission.

Social Enterprises as a Driver in Inclusive Innovation

Social enterprises driven by their dual focus on social and economic value creation and positioned to address societal challenges through innovative approaches understand their motivation. The interplay between social enterprises and innovation is complex, involving personal motivations, organizational structures, and external influences. Social enterprises in Malaysia have three accreditation criteria for recognition in line with creating 5,000 social enterprises by the year 2025, addressing societal challenges such as poverty, education gaps, inequality, and food security (MEDAC, 2022) but the number of accredited social enterprises currently is at 500, which is far from its initial target (MEDAC, 2025). Thus, for social enterprises to stay relevant in their field, they must prioritize partnerships with tech firms and policymakers to co-create inclusive, sustainable solutions (Raman et al., 2025).

Hybrid, Bricolage, and the Ecosystem

Social enterprises are different from non-governmental organizations (NGOs) as social enterprises operate to achieve a social mission and have financial sustainability, which is also known as the hybridity paradox (Battilana et al., 2014; Mair & Rathert, 2020). But it comes with the challenges of a limited support system and resources.

In Malaysia, social enterprises run their business with limited resources due to the institutional mismatch of funding, regulatory incentives, and infrastructure for digital or social innovation (Leung et al., 2019). But when a social enterprise first operates its business, it builds trust with beneficiaries, and then it focuses on satisfying its funders or customers. Thus, frameworks such as SEMy2030 aspire to create a supportive scaling up from the ecosystem mismatch, especially in certain stages of a social enterprise, to excel. As a diversion, social enterprises adopt a strategy of bricolage (Janssen et al., 2018). The mismatch has attracted corporations to provide funding or grants from their corporate social responsibility (CSR) fund. This collaboration provides grants in return, the social enterprises run their program in good faith, use the monetary proceeds in a good manner, and provide impact for the community they serve. Bricolage not only enables organizational survival under constraints but also fosters innovation grounded in local knowledge and social capital (Bansal et al., 2023; Cheung et al., 2019; Di Domenico et al., 2010).

The integration provides a valuable insight for Malaysian food waste social enterprises in this study. Malaysia's National Entrepreneurship Policy 2030 (NEP2030) can focus on transformational entrepreneurship related to innovation, technology, and ethical challenges in building up socioeconomics, while the Social Enterprise Masterplan 2030 (SEMy2030) focuses on the scalability of their business model and ensuring sustainability.

Islamic Ethical Principles and Business Practice

Islamic values offer a complementary ethical framework to sustainability practices. Principles such as *maqasid al-shariah* (preservation of life and resources), *amanah* (trust), *adl* (justice), and *rahmah* (compassion), known as Islamic values, are implemented in social enterprises as practices for sustainability (Sarif & Azan, 2017). Although many social enterprises in Malaysia are not led by Muslims, they engage with ethical and social values that align with broader principles of social responsibility and ethical business practices (Agus Setiawan et al., 2023). Non-Muslim embrace honesty, tolerance, and mutual respect, despite having differences in

cultural and religious backgrounds. The shared focus on business practices, ethical and social impact provides the foundation to build trust and collaboration, operating a social enterprise between non- Muslim social entrepreneurs and Muslim collaborators or beneficiaries (Indriyani Dian et al., 2022).

Strategic Tools: Business Model Canvas and Shared Value Framework

The Business Model Canvas (BMC) was developed by Osterwalder et al. (2010) and is widely used by businesses to map their business model in nine building blocks, while (Porter & Kramer, 2011) encourage businesses to investigate opportunities and identify their economic and social value by using the Shared Value framework (SVF). This framework is important but underutilized in research on Islamic or Southeast Asian social enterprises. The integration of the Business Model Canvas (BMC) and the Shared Value Framework (SVF) in social enterprise waste management offers a structured approach to creating economic, social, and environmental value. While the integration of BMC and SVF in waste management offers significant potential, the challenges depend on the barriers and resource constraints of the social enterprises (Nair, 2022; Vial, 2016) and a commitment to continuous innovation and collaboration.

Beneficiaries of Social Enterprise

Social enterprises often operate by rescuing surplus food and redistributing it to the communities. Social enterprises create employment and training opportunities for the marginalized community to address the root causes of food insecurity (Dhiman Satinder, 2020; Lorenzo-Afable et al., 2020).

Social enterprises contribute to environmental sustainability by reducing the food waste footprint by assisting food banks, soup kitchens, selling at a discount price, and creating new products (Busetti & Pace, 2023). A proper policy for contributors and enablers in Malaysia is still debatable due to health issues that need to be addressed for future enhancement.

While social enterprises significantly contribute to reducing food waste and benefiting various stakeholders, challenges persist. The lack of a dominant player and high fragmentation among food-sharing platforms can hinder the scalability and impact of these initiatives (Sarti et al., 2017). Additionally, while social enterprises address immediate food insecurity, issues such as poverty and inequality require broader policy interventions and collaboration across sectors to achieve long-term solutions.

Methodology

This study employed a basic qualitative approach to get the informants' experiences, beliefs, and practices in natural settings to explore how social enterprises navigate food waste challenges through digital tools while embedding Islamic values (Merriam, 2009). The analytical process incorporates the Shared Value framework, Business Model Canvas (BMC), and principles from Islamic moral economy to examine the interplay between strategy, ethics, and impact.

The research is interpretive in nature, aiming to construct meaning from participants' perspectives and explore the interaction between technology, ethics, and strategic thinking in social enterprise contexts.

Data was gathered through triangulation of multiple sources, including semi-structured interviews with key informants, document analysis, and observation (Denzin K Norman; Lincoln Yvonna S., 2018; Fusch et al., 2018). Interviews focused on themes such as digital transformation, operational decision-making, stakeholder engagement, and value creation. Supplementary documents provided context for historical evolution and public positioning.

To ensure the richness and relevance of qualitative data, this study adopted purposive sampling to identify informants who are deeply engaged in their respective social enterprises (Ahmad & Wilkins, 2025). The following criteria were used:

1. ***Leadership or Strategic Role****:* Informants held senior or founding roles such as founders, co-founders, or program managers, enabling them to provide insight into decision-making processes related to digital innovation and social impact.
2. ***Operational Knowledge of Technology****:* Informants were familiar with their digital tools and platforms, including the use of AI, mobile apps, or data logistics systems used to reduce food waste.
3. ***Stakeholder Engagement****:* Informants had experience interacting with beneficiaries, funders, or government partners, offering insights into how Shared Value is co-created.
4. ***Islamic Ethical Awareness****:* For enterprises with explicit or implicit Islamic influence, the informant was expected to understand how values such as *maslahah*, *ihsan*, or *adl* shaped their organizational culture and outreach.
5. ***Representativeness****:* One key informant from each case was selected to ensure comparative depth.
6. ***Minimum Involvement Duration***: Informants had been involved with the enterprise for at least one year to ensure they could reflect on its evolution and long-term strategy.

Five interviews were conducted with the founder and manager, and the interview recordings were transcribed and thematically coded using both inductive and deductive approaches. Deductive codes were based on Shared Value Framework elements (products, productivity, and clustering) and BMC dimensions (key activities, value propositions, and channels). Inductive codes emerged organically, and cross-case synthesis enabled the identification of patterns and emergent themes.

Findings

Table 1: Shared Value Framework of Three Social Entrepreneurs

Shared Value Pillar	I1	I2	I3	I4	I5
1. Reconceiving Products and Markets	Offers surplus meals at discounted prices to eco-conscious urban consumers. Provide meals to NGOs for shelter homes.	Offers surplus halal food via digital coordination to urban consumers from cafés, bakeries, supermarkets, hotels, and restaurants via apps.	Resells surplus food affordably to low-income residents in PPR flats and makes nutritious food accessible, promoting healthier eating habits.	Redistribution of surplus to soup kitchens and NGOs.	Redistributes surplus food to targeted communities.
2. Redefining Productivity in Value Chains	Leverages from WhatsApp, website, volunteers, and part-timers among students to streamline surplus food collection and redistribution.	Uses digital analytics and AI-lite tools to route customers to the partners and purchase with a discount, or engage with the rider to send the products	Uses Google Forms and WhatsApp for community-coordinated collection/distribution.	Collaborates with corporations for regular food rescue logistics.	Optimizes food rescue from restaurants, hotels, and events.
3. Enabling Local Cluster Development	Collaborates with restaurants and partner cafes in Klang Valley and Penang, and collaborates with local municipalities.	Builds multi-stakeholder alliances with SWCorp, GPS, youth groups, and local partners ranging from cafes, hotels, and government agencies to fight waste.	Form trust-based hyperlocal food redistribution within flats and engage with other corporations and agencies for events of healthy eating.	Supports institutional kitchens and public welfare homes.	Strengthens collaboration with local councils, hotels, and NGOs.
4. Embedded Ethical/Islamic Values	*Wasatiyyah*, *amanah*, *and ihsan are* embedded through	*Adl*, *rahmah*, *maslahah*, and *amanah* are embedded in communication,	*Rahmah*, *ukhuwah*, *sadaqah,* spirit embedded through grassroots care.	Operates with interfaith inclusivity and moral obligation to serve the poor for	Advocates no-waste ethics, aligning with understanding

Shared Value Pillar	I1	I2	I3	I4	I5
	efficiency and moderation.	branding, and operating values, despite tech-driven delivery.		as *maslahah, adl* and *rahmah.*	*maslahah, adl rahmah.*
5. Social and Environmental Impact	Reduces landfill waste, promotes awareness, and builds sustainable habits. Engages youth and volunteers in ethical social innovation.	Improves urban food access, restores dignity in redistribution, and engages with youth for social awareness.	Improves food access, reduces informal hunger, and builds community solidarity.	Reduces hunger and environmental impact at scale.	Raises awareness, reduces banquet food waste, and promotes volunteerism.

As per Table 1, this study reveals that I1, I2, I3, I4, and I5 each create shared value through strategic pathways in addressing food waste while generating social and environmental benefits. surplus food as a social asset (Porter & Kramer, 2011). Social enterprises provide the opportunity to access affordable nutrition for underserved populations due to issues in the food supply chain.

I2, I4, and I5 embedded ethical innovation in Islamic principles through value creation, such as *maslahah* (public benefit), *adl* (justice), and *rahmah* (compassion) into their operational philosophy (Sarif et al., 2017) and target broader urban consumers, emphasizing dignity, halal compliance, and inclusivity. I1, despite not being run by a Muslim, I1 aligns with *wasatiyyah* (moderation) through sustainable consumption strategies (Aydin, 2015). On the other end, I3 builds social capital by focusing on hyperlocal redistribution and community-driven care, reflecting *ukhuwah* (brotherhood) and *amanah* (trust).

I1, I4, and I5 organize effective, simple digital tools like WhatsApp, Google Sheets, and volunteer networks on how low-cost tech can support complex logistics when embedded within an ethical framework (Raman et al., 2025; Skivko, 2021). While I2 leverages mobile platforms and food analytics to reduce spoilage and forecast demand for urban users, as most of the shops and hotels engaged with them are café that are known for their good delicacies (United Nations Environment Programme, 2021). Nevertheless, I3 fosters food security through informal tech-assisted redistribution, which is easier for the communities (Xu & Xi, 2020). All five social enterprises contribute to different customer segments, but they engage with stakeholders from society, youth groups, corporate entities, and government agencies, emphasizing the nature of social innovation (Setiawan Hari Harjanto et al., 2023). This is because social enterprises can be tailored according to the community and social mission, and I1, I2, I3, I4, and I5 reflect the SEMY2030 integration. While I2 incorporates digital apps as part of their operational process in line with NEP2030.

From Table 2, the perspective of the five social enterprises illustrates the strategic business model canvas (Osterwalder et al., 2010). Each social enterprise has its own business models to coordinate and strategies for its communities and ecosystem. I2 collaborates with SWCorp and MYSaveFood during Ramadhan from a bazaar stall and distributes to the needy. I1 also collaborate with local municipalities to combat food waste during Ramadhan, on top of other months. I2 is surrounded by tech-enabled food collection through social awareness and marketing to dignified redistribution (Agmapisarn et al., 2025) . The organization's value proposition is clearly anchored with halal-compliant cafés and hotels that have surplus food either to sell it via apps or to dine in.

While I1 operates more commercially, targeting eco-conscious consumers via online channels and collaborating with food vendors. Its model emphasizes value capture through discounted surplus meals, while maintaining environmental branding to reinforce sustainable consumption. The key resources include analytics dashboards and urban partnerships, enabling lean and scalable operations.

I3 represents a community-centric model, using low-tech solutions like WhatsApp and Google Forms to facilitate redistribution in low-income flats (PPR). Its strength lies in cost minimization, trust-based relationships, and informal community coordination (Sundin et al., 2023). Although it lacks advanced tech, it maximizes social return through community networking.

While I1, I2, and I3 social enterprises generate revenue through sales and collaborate with corporates for more engagement on activities and sales, I4 and I5 depend on in-kind contributions and institutional funding. Each enterprise demonstrates unique strengths such as tech-enhanced logistics in I2, trust-based community relations in I3, and scale-driven impact in I4 and I5. Despite the different approaches, all social enterprises represent the same sustainable development goals of combating waste and empowering communities through SDG 2 (Zero Hunger), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action). These findings suggest that the BMC offers a flexible yet powerful structure for visualizing how social enterprises innovate not only economically, but also in value-driven stakeholder engagement. Thus, when a social enterprise is mapped against the Shared Value Framework (SVF) and the Business Model Canvas (BMC), it highlights how strategic and ethical choices are in line with the sustainable impact in the food waste ecosystem.

Table 2: Business Model Canvas of Three Social Entrepreneurs

Business Model Canvas	I1	I2	I3	I4	I5
Key Partners	Charity homes, F&B vendors, logistics partners, individual donors, School, corporate, and Municipal, youth volunteer	Charity homes, F&B vendors, Supermarkets, Hotels, Local producers, halal councils, government agencies, and Islamic institutions	Supermarkets, local farmers, youth volunteers, corporates, and local councils	Corporations, supermarkets, transport firms	Hotels, event halls, restaurants, and local councils
Key Activities	Surplus food collection, distribution, social awareness, engagement with schools and NGOs, and platform management	Marketing, social awareness, engagement, platform management, and ethical food redistribution (during Ramadhan)	Community outreach, bulk collection, and social awareness	Collection, sorting, and redistribution of food	Collection of banquet leftovers, repackaging, and outreach
Customer Relationships	Digital engagement, social media, vouchers, and sharing sessions	Digital engagement, voucher for first-time user, and sharing session	In-person relationships, local champions	Humanitarian aid reputation and institutional trust	Educational workshops and strong volunteer networks
Value Propositions	Provide food for the underserved, Affordable rescued food via an app and website	Halal, ethically sourced meals for affordable food via an app, with minimal charges, and the company can generate income	Accessible, low-cost fresh produce for the urban poor	Access to nutritious surplus food and large-scale redistribution	Saves untouched banquet/event food and raises awareness on food waste
Customer Segments	Eco-conscious consumers, students	Eco-conscious consumers	PPR residents, urban poor	Soup kitchens, NGOs, and PPR communities	Orphanages, shelters, urban poor

Business Model Canvas	I1	I2	I3	I4	I5
Key Resources	Mobile platforms, website, logistics, vendor networks, and team	Mobile platforms, logistics, vendor networks, and team	Warehouse, volunteers, transport, and team	Warehouses, logistics teams, and donation partnerships	Volunteers, donation networks, food donors
Channels	Mobile apps, websites, social media	Mobile apps, websites, social media	Trucks, community kiosks, and social media	Corporate donors, partner NGOs, direct delivery	Event managers, hotel F&B, logistics volunteers
Cost Structure	Tech development, transport, overhead cost, packaging, marketing, and outreach	Tech development, transport, overhead cost, marketing, packaging, and outreach	Transport, warehousing, operations, outreach	Warehousing, staffing, logistics	Transport, training, and volunteer management
Revenue Stream	Sales from the app and website, subscriptions	Charges are charged to retailers at 20% or as low as RM1.50 per product.	Low-margin sales, grants	Donations, corporate CSR, in-kind contributions	Sponsorships, events, collaborations

Discussion

The cross-case thematic analysis of I1, I2, I3, I4, and I5 reveals that these social enterprises differ in operational and stakeholder orientation through the shared value of their business models. The integration of the Business Model Canvas (BMC) and Shared Value Framework answers "how" the social enterprise operates and "why" they are matters socially.

I1 runs their social enterprise using a hybrid value chain or cross-subsidization models where they rescue surplus food, then I1 repackages and redistributes it for customers and for charity homes or *asnaf*. I1 focus on ethical food handling and affordability. Despite the social entrepreneur not being a Muslim, they hold the principle of *Amanah* in handling surplus food to solve the *maslahah* of the community who wants to purchase at a discounted price, and the vendor to lessen the food waste. I1 earned income from operational logistics and value-added services like donations and subscriptions.

I2 runs its social enterprise using fee-for-service or market intermediary models by providing a digital platform to urban consumers for them to dine in or purchase surplus food from vendors, either cafés or hotels listed with I2. I2 demonstrates Islamic ethics through solving *maslahah* (public good), providing *adl* (justice) to food, and *rahmah* (compassion) for the people to purchase at a discounted price through a halal-compliant food redistribution model and supports. I2 generates revenue through sales, commission from vendors, and encouraging responsible consumption.

I3 runs its social enterprise using an employment or community-based model. I3 shows a strong social capital by rescuing surplus vegetables and fruits, and I3 operates hyperlocals in urban flats (PPR), selling them at an affordable price using informal logistics and community networks. I3 wants to improve food accessibility and reduce inequality for urban B40 families despite their low margin, but in the long term, to nurture trust towards the communities at the flats. Even though I3 is not a Muslim-led social enterprise, I3's business model reflects Islamic ideals indirectly, such as moderation (*wasatiyyah*) and trust (*amanah*), reflecting on responsible consumption.

Each social enterprises operate with lean digital integration (I1), platform integration (I2), and a hyperlocal community redistribution network (I3) through social innovation that is embedded in their own context, stakeholder trust, and can be adaptable. This research contributes to extending BMC and SVF by embedding Islamic ethical principles, *maslahah, adl, ihsan*, and *amanah* in value propositions. The social enterprises demonstrate different strategic responses to the social enterprise model, balancing profit with social mission and religious drive. Their ability to function within their institutional support structures illustrates bricolage and strategic resilience. The alignment of their operation supports the goal to empower the underserved social entrepreneurs projected in the SEMy2030 framework, and by leveraging low-cost tech and trust-based partnerships, these social enterprises engaged NEP2030 by offering scalable, ethical innovation technology in food waste systems.

In contrast, I4 and I5 reflect more of a traditional non-profit hybrid. I4 focuses on partnerships and redistributive CSR efforts, operating on grants and donor funding. Meanwhile, I5 integrates the circular economy and education via training and awareness programs, positioning itself as an ecosystem enabler. Their impact is significant, with I4 managing to collect 1.1 million kg of food, the highest in the group, while I5 emphasizes more awareness and youth empowerment. Overall, all the above social enterprises used tech-based efficiency models for

community-driven redistribution and educational frameworks, and they contributed uniquely to Malaysia's circular food economy.

Conclusion

This study explored how five tech-driven social enterprises in Malaysia, I1, I2, I3, I4, and I5, reimagined food waste as not an environmental problem, but as a social and economic opportunity. By leveraging digital innovation and strategic design tools such as the Business Model Canvas (BMC) and Shared Value Framework, these social enterprises demonstrate how they can reduce food waste, improve food access, and create livelihood opportunities. The findings reveal that ethical values, particularly those rooted in Islamic principles such as *amanah* (trust), *maslahah* (public good), and *adl* (justice), play a pivotal role in shaping business intent, stakeholder trust, and operational legitimacy even if they are non-Muslim-led social enterprises. These values complement and reinforce the pursuit of Sustainable Development Goals (SDGs), especially SDG 2 (Zero Hunger), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action) (United Nation, 2015).

Despite facing constraints in funding, infrastructure, and technological adoption, the three social enterprises have effective models for food redistribution. Their hyperlocal strategies, data-informed logistics, and digital tools create a measurable impact while also generating scalable pathways for innovation in Malaysia's circular food economy. These insights not only contribute to the literature on social enterprises and food waste but also offer strategies that directly support the strategic pillars of NEP2030 and SEMy2030. As Malaysia moves toward a more inclusive and digitally resilient entrepreneurial landscape, the practices of I1, I2, I3, I4, and I5 serve as reference models for national replication and policy development, especially in integrating ethical entrepreneurship into circular food economies (Di Domenico et al., 2010; Di Gregorio et al., 2022).

Future Research

Future studies should also explore how social enterprises contribute to national KPIs under NEP2030 and SEMy2030, such as the creation of 5,000 accredited social enterprises, enhanced food security, and increased youth participation in digital entrepreneurship and community building. Research that evaluates the impact on urban poor communities will be essential in shaping Malaysia's next phase of economic development. While this study offers rich qualitative insights, it is limited in scope by the small number of case studies. Future research should broaden the empirical base to include social enterprises operating across different regions, sectors, and cultural contexts. Such expansion could enable comparisons and enhance generalizability. On top of that, studies on integrating policies on handling food waste are needed, and on the other hand, a study on the carbon emission of food waste redistributed or recreated should also be investigated.

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