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Assessing the Sustainability Gaps of Food Sharing Platforms: A Mixed-Method Approach

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Abstract

Food waste and food poverty are two interlinked global crises with significant environmental, economic, and social implications. According to the Food and Agriculture Organization (FAO), nearly one-third of all food produced worldwide for human consumption is lost or wasted each year, contributing to vast amounts of greenhouse gas emissions and the depletion of critical resources such as water, land, and energy (FAO, 2017). At the same time, around 805 million people suffer from hunger and malnutrition worldwide, highlighting the moral urgency of addressing both food waste and its contributions to food insecurity (Sharma et al., 2016). This dual challenge underscores the need for innovative and sustainable solutions that not only reduce food waste but also tackle the widespread issue of food poverty.

In this context, digital food-sharing platforms have emerged as potential solutions, facilitating the redistribution of surplus food, mitigating waste, and contributing to the alleviation of food poverty. However, despite their promise, these platforms face significant barriers to widespread acceptance and the sustainability of long-term user engagement. Key challenges include concerns about food safety, quality, and freshness, as well as the perceived practicality and reliability of using such platforms compared to traditional food sources. Furthermore, maintaining long-term user engagement is difficult, as initial enthusiasm often wanes due to inefficiencies and the fading novelty of the platform. Without addressing these barriers, the potential of food-sharing platforms to significantly reduce food waste and alleviate food poverty remains limited.

To fill this knowledge gap and advance the understanding of the factors driving the adoption and sustainability of food-sharing platforms, this thesis addresses two critical questions. The first examines the key factors influencing user acceptance of food-sharing platforms, while the second explores the determinants of sustained user engagement. By answering these questions, the research aims to offer practical guidelines for improving the adoption and sustainability of food-sharing platforms.

To investigate these questions, a systematic literature review was conducted to consolidate existing knowledge on the sustainability of food-sharing platforms. This was followed by qualitative research involving semi-structured interviews, guided by the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), to explore factors influencing consumer

acceptance of these platforms. Key determinants identified include perceived usefulness, ease of use, social influence, and concerns related to emotional and risk issues. A subsequent quantitative survey examined the factors influencing continuous usage, with a focus on perceived value and perceived risk.

The evaluation framework developed from these findings integrates both qualitative and quantitative insights, highlighting economic benefits, performance expectancy, social influence, and hedonic motivation as key drivers for both adoption and long-term engagement. The framework offers practical recommendations to improve user experience and enhance the long-term viability of food-sharing platforms as a solution to food waste and food poverty. This thesis contributes to a broader understanding of digital platform sustainability, supporting sustainable development goals through more effective food redistribution strategies.

List of Publications and Conference Papers

Published Papers:

Tian, S., Wu, L., Ciano, M. P., Ardolino, M., & Pawar, K. S. (2024). Enhancing innovativeness and performance of the manufacturing supply chain through datafication: The role of resilience. *Computers & Industrial Engineering, 188*, 109841.

Tian, S., Wang, M., Wu, L., Kumar, A., & Tan, K. H. (2025). Sustainability diffusion in the Chinese semiconductor industry: A stakeholder salience perspective. *International Journal of Production Economics*, *279*, 109470.

Tian, S., Sharma, A., Wu, L., & Pawar, K. S. (2024). A systematic literature review on the Digital Platform and its role in the circular economy: state-of-the-art and future research directions. *Journal of Digital Economy*.

Tian, S., Wu, L., & Pawar, K. S. (2025). Achieving food supply chain sustainability through digital sharing platforms: prospects in China. *Industrial Management & Data Systems*

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Papers Presented at Conferences:

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Chapter 1. Introduction

1.1 Introduction

Food waste presents a significant global concern with profound environmental, economic, and societal implications (Gustavsson et al., 2011). As reported by the Food and Agriculture Organization (FAO), nearly one-third of the food produced globally for human consumption is either lost or discarded annually, which greatly contributes to greenhouse gas emissions and the exhaustion of vital resources such as water, land, and energy (FAO, 2017). The ethical importance of addressing food waste is further heightened by the fact that approximately 805 million individuals around the world experience hunger and malnutrition (Sharma et al., 2016). Confronting these issues is essential to advancing multiple United Nations Sustainable Development Goals (SDGs), especially those concerning responsible consumption and production, ending hunger, and taking climate action (United Nations, 2015; FAO, 2017).

In response to this global crisis, digital food-sharing platforms have emerged as innovative solutions designed to facilitate the redistribution of surplus food (Davies, 2019). These platforms connect individuals or organisations with excess food to consumers seeking free or low-cost options, utilising technology to create a more efficient and accessible system for food redistribution (Michelini et al., 2018). Prominent examples of such platforms include Too Good To Go, OLIO, and Food Cloud, all of which have demonstrated significant potential in decreasing food waste and promoting community involvement (de Almeida Oroski et al., 2023; Falcone et al., 2017).

However, despite the promise of these platforms, they face considerable challenges in achieving widespread acceptance and sustaining long-term user engagement (Zhao et al., 2023; Schanes and Stagl, 2019). Key issues include concerns regarding food safety, platform reliability, and the establishment of user trust. Understanding the elements that impact both the adoption and ongoing utilisation of these platforms is essential for improving their sustainable performance and overall efficiency (Ciulli et al., 2012). This study aims to tackle these issues by creating a thorough evaluation model that incorporates insights from both qualitative and quantitative analyses.

When I commenced my PhD research in 2020, food-sharing platforms were beginning to gain

traction, driven by the broader movements toward sustainability and the circular economy. Throughout the course of this research, it became evident that while these platforms offer significant potential in addressing global food waste, they face numerous challenges that hinder their long-term success. This research specifically examines these critical issues, focusing on the factors influencing the adoption of food-sharing platforms and the determinants necessary to sustain user engagement over time.

This chapter introduces the research topic, highlighting the pressing issues of food waste and food insecurity and the role of food-sharing platforms in addressing these challenges. It establishes the research objectives, questions, and theoretical gaps, providing a strong foundation for the study. The introduction sets the stage for Chapter 2 by justifying the research design and methodological choices. Chapter 2 builds upon this by detailing the philosophical underpinnings, data collection techniques, and analytical strategies used to investigate the research questions.

1.2 Research Background

1. Food Waste and Food Shortage

Food loss and food waste refer to the reduction in food availability across various stages of the food supply chain. This reduction can occur during production, harvesting, packaging, transportation, storage, processing, sales, and consumption. Food loss specifically pertains to food lost during the production process or at any stage before it reaches the retailer. In comparison, food waste refers to items that, despite being of high quality and fit for human consumption, are discarded at the retail, food service, or consumption phases after passing through all stages of the agri-food supply chain (AFSC). This includes agriculture, manufacturing, packaging, distribution, and marketing (Canton, 2021). Food waste generally occurs in the later phases of the supply chain, while food loss happens at earlier stages, such as during production, post-harvest, and processing (Ciccullo et al., 2021).

Globally, food waste has reached alarming levels. As per the Food Waste Index Report from the United Nations Environment Programme (UNEP, 2021), around 931 million tons of food waste were produced in 2019, showing that roughly 17% of the world's food production is discarded. Households alone were responsible for 61% of this waste (568 million tons), with food services and retail accounting for 26% (242 million tons) and 13% (121 million tons),

respectively. The issue is particularly pronounced in developed economies, where food waste constitutes 40% of the total loss during the consumption phase (Gustavsson et al., 2011). For example, in the United States, food waste at the retail and consumer levels reached an estimated 414 pounds per capita in 2012 (Buzby and Hyman, 2012), with nearly 30-40% of the food supply, valued at approximately 133 billion pounds, being wasted annually (USDA, 2010). The UK faces similar difficulties, with households responsible for approximately 65% of the food waste within the nation's food and beverage supply chain (WRAP, 2021).

The issue of food waste extends beyond just economic or logistical concerns; it also has significant environmental impacts. Food production is a resource-heavy process, and the wastage of food substantially contributes to the exhaustion of natural resources and environmental harm. According to the FAO (2013), global food waste produces nearly 4.4 gigatons of CO2 equivalent each year—comparable to the emissions from all road transportation—making food waste a substantial contributor to climate change. Additionally, food waste involves the consumption of around 250 km^3 of surface and groundwater and demands 1.4 billion hectares of farmland, representing 28% of the world's agricultural land (FAO, 2015). This situation worsens environmental challenges like deforestation and water scarcity while intensifying the global food security crisis.

At the same time, food shortages remain a dire global challenge. Despite the excessive wastage of food, approximately 805 million people worldwide suffer from chronic hunger and malnutrition (Sharma et al., 2016). The global population is expected to reach 9.7 billion by 2050 and 11.2 billion by 2100, further intensifying food demand (Chen et al., 2017). If current trends in food production and waste persist, achieving global food security will become increasingly difficult. Addressing this paradox—where excess food is wasted while millions go hungry—is critical to achieving the United Nations Sustainable Development Goals (SDGs), particularly Goal 2 (Zero Hunger) and Goal 12 (Responsible Consumption and Production) (United Nations, 2015).

Food waste has garnered increasing attention from academics, policymakers, businesses, and the public. Governments and international organisations have initiated efforts to combat this crisis. For instance, the European Commission's Circular Economy Action Plan, European Green Deal, Farm-to-Fork Strategy, and the European Circular Economy Stakeholder Platform aim to minimise food waste through sustainable policies (Hebinck et al., 2018). Meanwhile,

academic research has focused on identifying factors contributing to food waste generation and developing strategies to mitigate it, including operational, behavioural, and policy interventions (Schanes et al., 2018). Technological solutions, such as the Internet of Things, artificial intelligence, and blockchain, are also being explored to streamline food waste recovery and quantification processes (Dou and Toth, 2021).

Despite these advancements, however, the complexity of the food waste problem remains a barrier to finding comprehensive solutions. Quantification methods are still dispersed, with food waste being measured on global scales as well as in site-specific studies (Griffin et al., 2009; Eriksson et al., 2018). Furthermore, efforts to reduce food waste are hindered by both supply-side (e.g., production inefficiencies) and demand-side (e.g., consumer behaviour) factors, as well as geographical constraints (Garrone et al., 2016). Therefore, new approaches are needed to tackle these issues at both local and global levels.

One promising development that has the potential to address the food waste crisis is the rise of digital platforms. These platforms are uniquely positioned to streamline the redistribution of surplus food, breaking down geographic barriers and expanding access to food waste recovery solutions beyond local, temporary, or accidental measures (Harvey et al., 2020). Digital platforms can facilitate more efficient communication between food producers, retailers, and consumers, potentially offering a scalable solution to the food waste crisis.

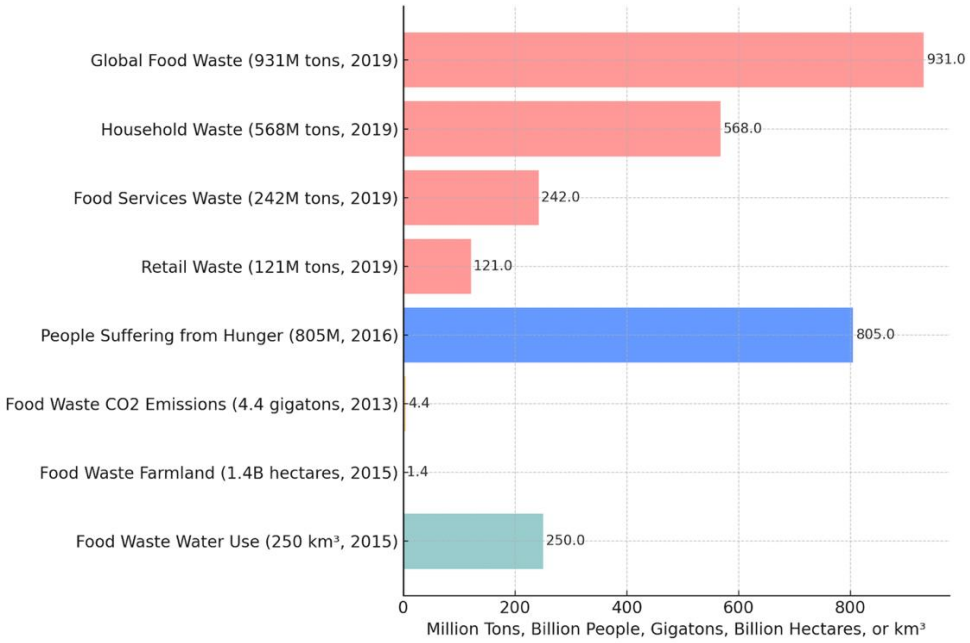

Figure 1. Global Food Waste and Hunger Crisis

1. UNEP (2021) - Food Waste Index Report.
2. FAO (2013) - Data on CO2 emissions from food waste.
3. FAO (2015) - Data on farmland and water use associated with food waste.
4. Sharma et al. (2016) - Global hunger statistics.
5. USDA (2010) - Food waste statistics for the United States.
6. Buzby and Hyman (2012) - Data on per capita food waste in the United States.
7. WRAP (2021) - Data on food waste in the UK's food and beverage supply chain.

2. Digital Platform

Management scientists have introduced the concept of platforms from three distinct research perspectives: products, technological systems, and transactions (Gawer, 2009). In the field of product development and design, researchers define a platform as a project that generates new products or a series of products for specific companies (Wheelwright and Clark, 1992). Wheelwright and Clark (1992) coined the term 'platform product' to describe new products that satisfy customer needs and can be easily modified into derivative products. From a technical strategy perspective, a platform serves as a valuable control point within an industry. At the industry level, platform competition can significantly influence the success or failure of business operations and product evolution. Industrial economists characterise platforms as companies, organisations, institutions, or products that act as intermediaries facilitating transactions between multiple groups of agents (Rochet and Tirole, 2003).

Over the past decade, the share of the platform market in the global economy has grown rapidly. Compared with traditional companies, platform markets can reduce transaction costs and lower operational expenses, thereby increasing profit margins for enterprises (Hagiu, 2013). As an innovative business model, multi-sided platforms create significant competitive advantages for companies, attracting firms of various industries and sizes to adopt this model and join the platform ecosystem (Hagiu, 2013). The emerging digital platform economy has garnered substantial interest from researchers. With the advancement of network technology, platform markets in various industries, including healthcare, food, accommodation, tourism, and transport, are thriving. Eisenmann et al. (2011) assert that platforms possess paradigmatic value-creation properties. Stabell and Fjeldstad (1998) argue that platforms are an essential configuration for organisations to create value.

The definition of a platform is not uniform among researchers. Bresnahan and Greenstein (2014) describe a platform as a set of standard components that facilitates coordination between upstream and downstream processes. Similarly, West et al. (2011) define a platform as a standard architecture that allows for the modular replacement of components. Gawer and Cusumano (2002) argue that a platform, as a product, represents the ultimate demand of users.

They propose that a platform is a subsystem or component of a technological system, emphasising that its functionality is interconnected with other sub-components of a specific technological system. Therefore, a platform, as a component or subsystem, remains viable only within the support of an integrated system. If removed from the system, the platform becomes redundant. The "owner" of the platform is an organisation that controls a core element of the technological system. For example, Microsoft is a platform "owner" (Gawer and Henderson, 2007). Moreover, the platform owner and other companies form a complementary market, competing with one another, as demand for the platform arises from the demand for the entire system (Gawer and Henderson, 2007). Tiwana et al. (2010) incorporated the concept of the digital platform, defining it as an extensible codebase based on a software system. According to Tiwana et al. (2010), the core function of a digital platform is to provide shared modules that interoperate with software systems and interactive interfaces.

Digital platforms stand out due to their ability to create a "positive feedback loop" among customers, commonly known as the network effect. This effect suggests that as the number of users on the platform increases, its value rises for both owners and customers. A growing user base attracts more users and complementary innovations, encouraging firms and customers to engage more with the platform and its ecosystem (Eisenmann et al., 2011; Ghazawneh and Henfridsson, 2013). Furthermore, in platform markets where digital platforms act as intermediaries, interactions among participants are shaped by the network. As a result, multiple intermediary structures can provide a unified platform to facilitate customer interactions (Rochet and Tirole, 2003; Eisenmann et al., 2006; Gawer and Cusumano, 2002).

Beyond network externalities, platforms' competitive advantage also lies in their multilateral nature. Bilateral or multilateral platforms act as intermediaries, matching appropriate upstream suppliers with downstream consumers. These platforms further enhance the transaction experience for participants, making them more appealing than traditional intermediaries. For example, online labour platforms enable companies to find, screen, hire, and pay workers, while workers can locate jobs and communicate with employers via the platform. Unlike traditional labour intermediaries, online labour platforms do not assume responsibility for contracts between parties. Additionally, scholars widely agree that multilateral platforms can help mitigate market failures. Market failures, often stemming from the instability of product suppliers in terms of quality and quantity, can be addressed by platforms through reputation mechanisms, such as rewards and penalties, to ensure transactional integrity. For instance, large

online shopping platforms frequently include features for evaluating products or stores, allowing both consumers and sellers to rate each other post-transaction. Products or stores with higher ratings tend to attract more consumers.

Another critical area of focus in platform literature is the concept of platform leadership (Gawer and Cusumano, 2014). In their work *Platform Leadership*, Cusumano explores strategies that organisations can employ to achieve and sustain their status as platform leaders, with particular emphasis on the evolution of platform-related technologies within the high-tech sector. Achieving platform leadership is a strategic, long-term goal for firms seeking enduring success. Given the inherent dynamics of platform markets, competition within the technology industry is becoming increasingly intense. Market leadership can be assessed through various indicators, such as market share, business size, and customer value. However, in platform markets, obtaining detailed information, such as financial statements and customer value, can be challenging. As a result, the number of users often emerges as the most practical metric for evaluation, aligning with the network externalities characteristic of platforms—the larger the user base, the greater the platform's influence (Evans and Schmalensee, 2010).

3. Digital Platforms in the Food Industry

The pervasive influence of digital platforms within the food industry is evident across various sectors, including agriculture, retail, and consumer interactions (Chan et al., 2023; Meenakshi, 2022). These platforms facilitate transactions in the food industry, such as agri-food trading, online grocery shopping, food delivery services, and food sharing (Granheim et al., 2022). This shift represents not only a technological advancement but also a fundamental reconfiguration of food production, distribution, and consumer behaviour. In agriculture, digital platforms offer the potential for enhanced efficiency and the ability to address challenges related to sustainable development (Abbate et al., 2023).

Alternative food networks (AFNs) represent a significant aspect of this digital transformation. Viciunaite (2023) and Michel-Villarreal et al. (2021) explore various forms of AFNs, including farmers' markets, community-supported agriculture, and cooperatives. The integration of digital technologies into AFNs, as highlighted by Dal Gobbo et al. (2022) and Oncini et al. (2020), demonstrates the convergence of traditional food systems with digital platforms, with digital farmers' markets emerging as notable examples. Additionally, grocery and food delivery platforms are key elements of the digitalisation trend within the food industry (Granheim et al.,

2022). Wahyudin et al. (2023) examine the features of digital food convenience store platforms in Indonesia. These cases illustrate how traditional grocery models are adapting to digital platforms to meet evolving consumer preferences.

In summary, the digitalisation of platforms in the food industry represents a significant paradigm shift with far-reaching implications, transforming traditional food systems and redefining consumer experiences (Granheim et al., 2022). These digital platforms are reshaping the food industry landscape by enhancing efficiency, sustainability, and social dynamics (Abbate et al., 2023). Continued research is essential to fully comprehend this digital transformation and its global impacts. Despite advancements in various domains, academic attention to food-sharing platforms remains limited (Michelini et al., 2018). These platforms facilitate food redistribution initiatives, increasing the effectiveness and efficiency of food repurposing efforts (Harvey et al., 2020). Through digital interfaces, they enable the exchange of food products via purchases, sales, and donations, connecting suppliers with potential beneficiaries to reduce food wastage (Ciulli and Kolk, 2019). Existing research in this area lags behind other digital food platforms, highlighting the urgent need for increased scholarly focus to explore the dynamics and implications of food-sharing platforms in modern food systems.

4. Sharing Economy and Circular Economy

The discussion surrounding the ideas of the circular economy (CE) and the sharing economy (SE) has greatly expanded among industry and policymakers (Geissdoerfer et al., 2017; Mont et al., 2020). Both concepts are closely tied to the idea of 'strong sustainability' (Turner, 1989), as CE and SE aim to preserve natural resources for the benefit of both humanity and the planet, instead of replacing them with human capital (Ayres et al., 1998; Blomsma and Tennant, 2020). Despite these common principles, there has been a lack of integrated examination of CE and SE within academic discourse.

The circular economy has emerged as a novel sustainable model in the business context, seeking to replace the traditional linear take-make-dispose system. This circular approach aims to redefine waste as a valuable resource (Perey et al., 2018; Salvador et al., 2021) and emphasises regenerative and closed-loop product life cycles over the traditional end-of-life concepts (Camacho-Otero et al., 2018; Sassanelli et al., 2019). The circular economy focuses on implementing waste management systems through proactive design, incorporating strategies such as reuse and recycling, minimising unnecessary goods, and promoting the

growth of circular governance with enhanced participatory strategies (Santagata et al., 2020). This approach not only aims to reduce environmental impacts but also seeks to create sustainable economic opportunities by transforming waste into wealth.

In contrast, the sharing economy (SE), also referred to as collaborative consumption, the platform economy, or the peer-to-peer economy, is recognised as a socio-technical system that facilitates the trading of goods and services between individuals (Sigala, 2022). With rapid technological advancements, SE businesses have proliferated across various sectors (Akhmedova et al., 2022). The sharing economy's capacity to leverage idle resources and prioritise access over ownership has led to its widespread adoption and adaptation across diverse economic contexts (Belezas et al., 2023). In the hospitality and tourism industries, the SE has been particularly disruptive, significantly affecting accommodation (Airbnb), transportation (Uber), and food delivery (Deliveroo). The SE has transformed consumer preferences, supply chains, customer experiences, markets, and socio-economic frameworks (Eckhardt et al., 2019).

Both concepts have garnered considerable attention for their roles in promoting sustainable development. However, their definitions and connections often lack clarity and consensus. Henry et al. (2021) explore the relationship and potential synergies between the circular economy (CE) and the sharing economy (SE). Their research highlights that the CE typically operates through top-down governance models, focusing on environmental sustainability by creating resource loops and minimising waste. In contrast, the SE is driven by bottom-up initiatives, emphasising the efficient use of under-utilised assets through consumer participation and digital platforms. The SE can be viewed as a component of the CE, with SE practices enhancing the circularity of resources. In the context of food redistribution, food-sharing platforms operate on the principles of the SE by utilising digital technologies to facilitate the exchange and distribution of food, making it accessible to a wider audience. These platforms enhance the circularity of food resources by ensuring that edible food is diverted from landfills and redistributed to consumers, thereby supporting the broader goals of the circular economy. Thus, food-sharing platforms can be seen as a practical application of the sharing economy within the framework of the circular economy.

Central to the reimagining of sharing within an economic framework is the pivotal role of digital platforms as exchange hubs (Schor, 2016). Zervas et al. (2017) emphasise that the

success of the sharing economy is heavily dependent on digital platforms, which are enabled by information and communication technologies (ICT) that effectively connect consumer needs with sharing economy activities. As a result, various economic initiatives based on innovative consumption models are gaining significant traction in many developed nations. Botsman and Rogers (2010) note that sharing platform business models, grounded in sharing economy principles, are expanding across multiple sectors, including transportation (e.g., Uber), accommodation (e.g., Airbnb), and finance (e.g., Indiegogo). These platforms not only facilitate transactions but also foster communities and trust among users, both of which are essential for the sustainability of the SE model.

Growing attention is being directed towards the sharing economy as a model for promoting sustainable consumption practices. Heinrichs (2013) views the sharing economy as a "potential new pathway to sustainability," while Botsman and Rogers (2010) suggest it could provide an escape from the unsustainable consumption patterns prevalent in developed economies. Their primary argument is based on a cultural shift from "consumer-owned assets" (i.e., the traditional linear economy) to "shared access to assets" (i.e., the sharing economy), which facilitates connections between consumers and enhance the utilisation of goods and services that are not fully utilised (Cheng, 2016). This shift reflects a broader societal trend towards valuing access over ownership and recognising the environmental and economic benefits of maximising the use of existing resources (Hossain, 2020). Cohen and Munoz (2015) propose an integrated framework that categorises the sharing economy into the five key categories of sharing include energy, food, goods, mobility, and transport, as well as space sharing. They highlight the food sector as a strategic area for implementing sustainable consumption and production (Tukker et al., 2008). Both at macro and micro levels, food sharing can positively influence all three pillars of sustainable development: boosting savings, fostering social connections, and reducing waste (Davies et al., 2017). However, the empirical role of food sharing platforms in promoting sustainability remains underexplored and warrants further investigation. Expanding research in this area could provide deeper insights into how digital platforms can be leveraged to enhance the sustainability of food systems and other sectors within the sharing economy.

1.3 Research Questions

Globally, the contradiction between food surplus and food scarcity is becoming increasingly difficult to ignore. While vast amounts of food are wasted each year, millions of people continue to suffer from hunger and malnutrition. The Food and Agriculture Organization (FAO) estimates that approximately 931 million tonnes of food produced for human consumption are wasted annually (FAO, 2017; UNEP, 2021). This waste generates 4.4 gigatonnes of CO2 emissions (FAO, 2013) and depletes critical resources, including 1.4 billion hectares of agricultural land and 250 km^3 of water (FAO, 2015). Meanwhile, around 805 million people globally suffer from chronic hunger (Sharma et al., 2016). Addressing these twin challenges is crucial for achieving the United Nations Sustainable Development Goals, particularly those focused on eradicating hunger and promoting sustainable consumption.

In response to this challenge, food-sharing platforms, also referred to as 'Food Waste Platforms', have emerged as innovative solutions designed to reduce food waste by redistributing surplus food to those in need (Michelini et al., 2018). These platforms connect individuals or organisations with excess food to consumers seeking free or low-cost food, leveraging digital technology to create a more efficient and accessible system of redistribution (Ciulli et al., 2020). Prominent examples include Too Good To Go, OLIO, Food Cloud, and Plan Zheroes. The Too Good To Go app has been downloaded 15 million times and operates in 13 European countries (van der Haar and Zeinstra, 2019). Similarly, OLIO, founded in 2015, has amassed 1,776,585 community members and has significantly reduced food waste in the United Kingdom (OLIO, 2020). These successes highlight the potential of digital platforms to contribute to sustainable development and transform the food industry. Compared to traditional food banks and recycling intermediaries, food-sharing platforms offer broader connectivity and greater potential to address the food waste crisis effectively.

However, despite their promising potential, these platforms face significant challenges in achieving sustainable growth, particularly in terms of gaining widespread user adoption and sustaining long-term engagement. Furthermore, empirical studies on the effectiveness and sustainability of food-sharing platforms remain limited. Much of the existing research has focused on classifying food recovery business models (Corbo and Fraticelli, 2015; Davies et al., 2017), exploring the features and potential of food recovery platforms (Bachnik and Szumniak-Samolej, 2018; Ciulli et al., 2020; Falcone and Imbert, 2017), and identifying

barriers to consumer participation in food redistribution (Ganglbauer et al., 2014; Lazell, 2016). While interest in food recycling research has grown in recent years (Ciulli et al., 2020; Davies et al., 2017; Falcone and Imbert, 2017), there is a notable gap in understanding the performance metrics of these platforms and the factors that influence their success.

Understanding the key factors that influence the adoption and sustained use of food-sharing platforms is critical to improving their long-term performance and impact. This research aims to fill this gap by identifying the critical indicators that affect the performance of food-sharing platforms. Through an analysis of these indicators, the research seeks to provide actionable insights that can enhance user engagement and improve the effectiveness of food-sharing platforms in addressing food waste.

Research Questions:
RQ1: What are the key factors that influence the adoption and initial user acceptance of food-sharing platforms?
RQ2: What are the key factors that impact the sustained engagement and long-term performance of food-sharing platforms?

1.4 Theoretical Gaps

Despite the growing interest in food-sharing platforms, there remains a significant theoretical gap in understanding the factors influencing both consumer adoption and long-term engagement. Existing studies have predominantly examined operational mechanisms and business models (e.g., Michelini et al., 2018; Ciulli et al., 2020), often neglecting the psychological, social, and technological factors that drive individual user behaviours. While previous research has applied frameworks such as the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB) to various technology adoption contexts, their applicability to food-sharing platforms remains underexplored. Moreover, much of the literature focuses on initial adoption, with limited attention paid to the factors that sustain long-term user engagement. Understanding what drives continued participation in food-sharing platforms is crucial for ensuring their long-term viability and effectiveness in reducing food waste.

Consumer adoption of food-sharing platforms is a complex process influenced by multiple determinants, including perceived utility, social influence, and financial considerations. However, existing research has largely focused on technological functionality and economic incentives, overlooking the emotional and experiential aspects of user engagement. The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) provides a comprehensive framework to address this gap by incorporating constructs such as hedonic motivation, habit, and price value. These factors are particularly relevant for food-sharing platforms, where users are driven not only by utilitarian benefits but also by community engagement, enjoyment, and sustainability concerns. By leveraging UTAUT2, this study aims to uncover the underlying psychological and behavioural drivers that influence adoption beyond mere technological and economic factors.

While initial adoption is critical, ensuring long-term user engagement is equally important for the success of food-sharing platforms. Many users may try these platforms once but fail to develop a consistent habit of using them. This phenomenon raises questions about what motivates users to continue engaging with food-sharing services over time. The literature lacks a comprehensive understanding of the factors that drive sustained participation, particularly in relation to perceived value and perceived risk. The relationship between initial adoption and sustained usage is not linear; factors influencing users' decisions evolve as they become more familiar with the platform and its functionalities.

Perceived value plays a crucial role in influencing long-term engagement by shaping users' assessments of the platform's benefits relative to the costs of participation. As emphasized in service marketing literature, perceived value extends beyond financial considerations to include experiential, social, and sustainability-related benefits (Zeithaml, 1988). Users who derive meaningful benefits, such as convenience, social interactions, or environmental impact, are more likely to remain engaged. However, the extent to which these dimensions of perceived value influence long-term usage in food-sharing platforms remains underexplored in current research. The multidimensional nature of perceived value necessitates an examination that goes beyond monetary benefits, incorporating psychological, social, and ecological aspects to capture the full spectrum of user motivation.

Conversely, perceived risk poses a significant barrier to continuous engagement. Risks related to food safety, reliability, and privacy may deter users from sustained participation, particularly

if negative experiences or uncertainty outweigh the perceived benefits. Prior research suggests that perceived risk negatively impacts engagement in digital services (Featherman and Pavlou, 2003), yet its specific implications for food-sharing platforms require further investigation. Addressing these concerns through trust-building measures, clear communication, and platform improvements is critical for retaining users over time. In food-sharing contexts, perceived risk often stems from concerns about food quality and safety, as well as potential misuse of personal information. Thus, understanding and mitigating these risks is essential for fostering long-term engagement.

The integration of UTAUT2 with perceived value and perceived risk provides a comprehensive framework for understanding both consumer adoption and long-term engagement. UTAUT2 offers a robust model for assessing the motivations behind technology adoption, while perceived value and perceived risk contextualize user decisions within the broader experience of food-sharing platforms. This combined approach allows for a more holistic analysis of user behaviour, considering both the initial decision to adopt and the factors that influence sustained participation. By investigating these constructs together, this research aims to illuminate the interconnectedness of cognitive, emotional, and contextual factors that shape user engagement.

1.5 Research Objectives

The primary objective of this research is to explore how the sustainable performance of food-sharing platforms can be enhanced and to identify the key indicators influencing their performance. To achieve this, the research will proceed in several stages, beginning with a comprehensive literature review to synthesise existing knowledge and identify critical gaps in the sustainable development of these platforms. Next, the research will investigate the technology acceptance of food-sharing platforms through qualitative methods. Using the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as a framework, semi-structured interviews will be conducted with consumers to explore their willingness to use these platforms and the barriers they face. Thematic analysis of the interview data will provide insights into factors that could enhance user engagement and platform adoption.

This research will also investigate the factors influencing the continuous use of food-sharing platforms. Quantitative methods, including the distribution of questionnaires, will be employed to assess how perceived value and perceived risk affect user satisfaction and ongoing

engagement. Statistical analysis will be used to identify patterns and relationships, providing a comprehensive understanding of the drivers of long-term engagement with these platforms. Finally, the research will develop an evaluation framework that integrates findings from the literature review, interviews, and surveys. This framework will offer a structured approach to assess and enhance the effectiveness of food-sharing platforms, providing practical guidelines to improve their sustainable performance. By achieving these objectives, the research aims to contribute to reducing food waste and supporting sustainable development goals.

Chapter 2. Research Methodology

2.1 Introduction

This chapter outlines the research methodology employed in this study, detailing the philosophical underpinnings, methodological approach, and research design adopted to investigate food-sharing platforms. Given the complexity of understanding user adoption and engagement with these platforms, a rigorous and well-structured methodology is essential to ensure valid and reliable findings. This research follows a mixed-methods approach, integrating both qualitative and quantitative methods to provide a comprehensive understanding of the factors influencing food-sharing platform adoption and continued usage.

This chapter begins by discussing the research philosophy, examining key ontological, epistemological, and axiological assumptions that shape the study's approach. A positivist paradigm is adopted, grounded in objectivist ontological assumptions, ensuring that findings are derived from observable and measurable phenomena. The study then explores its research setting, describing the context in which food-sharing platforms operate and highlighting the significance of digital technologies in reducing food waste.

A systematic mixed-methods research design is employed, incorporating an explanatory sequential approach, where qualitative research is conducted first to explore user motivations and barriers, followed by a quantitative study to test the broader applicability of these insights. The qualitative phase involves semi-structured interviews with users and non-users of food-sharing platforms, aiming to uncover detailed perspectives on platform adoption and retention. The quantitative phase consists of a large-scale survey, analyzed using statistical techniques to identify the key determinants influencing long-term engagement with these platforms.

The methodological approach also includes the development of an evaluation framework based on the findings from both qualitative and quantitative studies. This framework synthesizes the key factors affecting food-sharing platform success, offering a structured means of assessing platform performance in terms of sustainability and user engagement. By combining theoretical foundations with empirical evidence, this research contributes to the literature on digital platforms and sustainable consumption.

The remainder of this chapter provides an in-depth explanation of each methodological component, beginning with the philosophical foundations of the study. It then details the mixed-methods research design, data collection strategies, and analytical techniques employed to address the research questions. Through this structured approach, the research aims to generate valuable insights that support the long-term viability of food-sharing platforms.

This chapter describes the research methodology, explaining the ontological and epistemological assumptions, the mixed-methods approach, and the sequential research design. It provides details on the qualitative and quantitative methods used, ensuring methodological rigor. The methodological choices discussed in Chapter 2 guide the systematic literature review in Chapter 3. The literature review synthesizes existing research, identifying gaps that inform the empirical investigations presented in Chapters 4 and 5.

2.2 Research Philosophy

Alvesson and Sköldberg (2009) define research philosophy as a comprehensive framework of beliefs and assumptions that underpin the development of knowledge. This framework is intrinsically linked to the researcher's intentions, goals, and philosophical assumptions, shaping the entire research process. Johnson and Clark (2006) emphasise the importance for business and management scholars to recognise that their research strategy choices are deeply embedded in philosophical assumptions. These assumptions significantly influence not only the research process but also the interpretation and presentation of findings. By understanding these underlying philosophical assumptions, researchers can better navigate the complexities of their research endeavours, ensuring a more coherent and rigorous approach. These assumptions include the nature of reality encountered in the study (ontological assumptions), the nature of human knowledge (epistemological assumptions), and the values that influence the methodological approach (axiological assumptions) (Alvesson and Sköldberg, 2009).

2.2.1 Ontological Assumptions

Ontology concerns the nature of reality and what can be known about it. According to Crotty (1998), researchers may begin with ontology, epistemology, or methodology; however, some scholars argue that identifying ontological assumptions first is crucial (Grix, 2004). Ontological assumptions shape how researchers perceive the world and influence their epistemological perspectives, which, in turn, affect their methodological choices and data

collection methods (Mack, 2010). Ontology is defined as a set of beliefs about the nature of reality, encompassing the nature of existence and what is acknowledged about the world (Hudson and Ozanne, 1988). It is concerned with the existential qualities of phenomena and seeks to address research questions by identifying existing categories of knowledge (Alharahsheh and Pius, 2020).

In the context of this study, ontological and epistemological viewpoints are based on the premise that realities exist independently of individual perceptions. By observing and analysing truths and regular patterns, researchers can uncover facts about the social world. Objectivism, a form of realism, asserts that social entities exist in a manner similar to physical entities in the natural world, independent of individual perceptions and definitions (Saunders et al., 2009). This research adopts an objectivist philosophical perspective, suggesting that food recovery platforms and their role in reducing food waste are tangible realities. Empirical observations indicate that the actual recovery performance of these platforms is lower than anticipated, prompting an exploration of food-sharing platforms from a sustainability perspective. Through a systematic literature review, individual users are identified as critical participants in food-sharing platforms, highlighting two key issues: platform acceptance and continuous use. This ontological stance provides a foundational understanding of the phenomena under investigation.

2.2.2 Epistemological Assumptions

Epistemology concerns the nature and scope of knowledge, addressing how researchers acquire knowledge about reality (Carson et al., 2001). It focuses on understanding reality through the process of knowledge discovery and establishes what constitutes acceptable, genuine, and legitimate knowledge (Burrell and Morgan, 2019). This study adopts a positivist paradigm, which asserts that social information is derived from the experiences and perceptions of social actors (Bryman, 2008). According to positivism, only phenomena that can be verified through observation are considered knowledge (Ormston et al., 2014). The findings of this study are understood to pre-exist within objects and await discovery through observation and measurement.

The positivist approach involves formulating research hypotheses based on established theories, such as perceived value and e-service quality (Parasuraman et al., 2005). These theories provide a foundation for hypotheses that can be empirically tested, contributing to the body of knowledge and enabling further validation through research. Positivism emphasises the

importance of observable, measurable facts in uncovering the truth about the social world, facilitating the development of law-like generalisations of social reality (Saunders et al., 2009).

From an epistemological standpoint, objectivists strive to ensure their studies remain value-neutral, adhering to the belief that social processes and entities exist independently of human perspectives. This commitment to value neutrality involves separating personal values and opinions from the scientific process, employing research methodologies similar to those used in the natural sciences. By maintaining this rigorous approach, researchers aim to provide objective and reliable insights into the phenomena under investigation.

2.2.3 Axiological Assumptions

Axiology, the study of values and value judgements, explores how researchers' values influence their methodological approach and the ethical considerations in their research (Alvesson and Sköldberg, 2009). In the context of objectivism, axiological assumptions emphasise the importance of maintaining objectivity and minimising the influence of personal biases on the research process. Objectivists hold that social phenomena exist independently of human perceptions; therefore, research should aim to remain unbiased and value-neutral.

In this study, the axiological stance involves a commitment to rigorous and systematic inquiry, ensuring that the research process is guided by objective principles rather than subjective values. This approach aligns with the positivist paradigm, which advocates empirical observation and measurement as the primary means of acquiring knowledge. By adhering to these principles, the research aims to provide reliable and valid insights into the role of food-sharing platforms in reducing food waste, thereby contributing to a broader understanding of sustainability in this context.

In summary, the ontological, epistemological, and axiological foundations of this research are firmly rooted in objectivism and positivism. This philosophical stance emphasises a commitment to uncovering objective truths about food recovery platforms and their sustainability impacts through rigorous, empirical investigation. By maintaining a value-neutral approach and employing systematic methodologies, the research aims to make credible and insightful contributions to the field of business and management.

Research Setting

Food-sharing platforms have become essential in addressing food waste by connecting surplus food with consumers or charities. These platforms operate through various models, including business-to-consumer (B2C), business-to-business (B2B), and consumer-to-consumer (C2C) interactions. They leverage technology to facilitate the redistribution of food that would otherwise be wasted. The table below provides examples of food-sharing platforms (Table 1).

Platform	Description	Region	Category
MyFoody	Italian platform for selling near-expiry or defective products at discounted prices. Uses an app to locate participating supermarkets.	Italy	B2C
Leloca	New York-based platform offering discounts on surplus food from restaurants. Deals typically 30-50% off, redeemed within 45 minutes.	New York, USA	B2C
Too Good to Go	Enables customers to order surplus food from local eateries at reduced prices, collected before closing time in eco-friendly packaging.	Global	B2C
FoodCloud	Non-profit facilitating surplus food donations from businesses to charities via app and website notifications.	Ireland	B2B
Bring the Food	Developed by Banco Alimentare, combines traditional food collection with digital channels to donate surplus food.	Italy	B2B
OLIO	UK-based platform connecting individuals with surplus food using geolocation. Facilitates food exchange to reduce household waste.	UK	C2C
Casserole Club	UK and Australia-based, volunteers share surplus home-cooked meals with neighbours who cannot cook for themselves.	UK, Australia	C2C
Eat you later	Helps businesses manage surplus food by selling it at reduced prices. Used in Nordic countries and other parts of Europe.	Nordic countries, Europe	B2C
Tapper	Platform for listing expiring food products by businesses, allowing consumers to reserve and collect them within a specified timeframe.	Global	B2C
Yonodesperdicio.org	Spanish platform promoting local food exchange to tackle household food waste. Users give and receive food, share recipes.	Spain	C2C
Ni Las Migas	Mobile app connecting users with establishments offering surplus food at reduced prices, facilitating savings and waste reduction.	Spain	C2C

Table 1. Examples of Food Sharing Platforms

Food Redistribution Theoretical Model

This research establishes a theoretical model to describe the online food redistribution process, drawing on the operational processes of food-sharing platforms and a comprehensive literature review. As shown in Figure 2, food recovery platforms facilitate the transfer of surplus food among merchants, individual consumers, and non-governmental organisations, enabling the

redistribution of excess food. The process begins with providers posting their surplus food on food-sharing platforms, such as websites or mobile applications. Potential food recipients within the same region can then order this food online and collect it offline. The key definitions used within the model are summarised in Table 2.

According to Ciulli et al. (2019), digital platforms play crucial network brokerage roles by "informing, connecting, mobilising, and integrating" in the context of food waste recovery. This suggests that food recovery platforms build virtual communities and support both online and offline interactions among users. A key function of food-sharing platforms is, therefore, to facilitate information exchange between food providers and receivers. Ideally, this food redistribution supply chain can effectively redistribute food and consume all "avoidable food waste," contributing to the achievement of a circular economy.

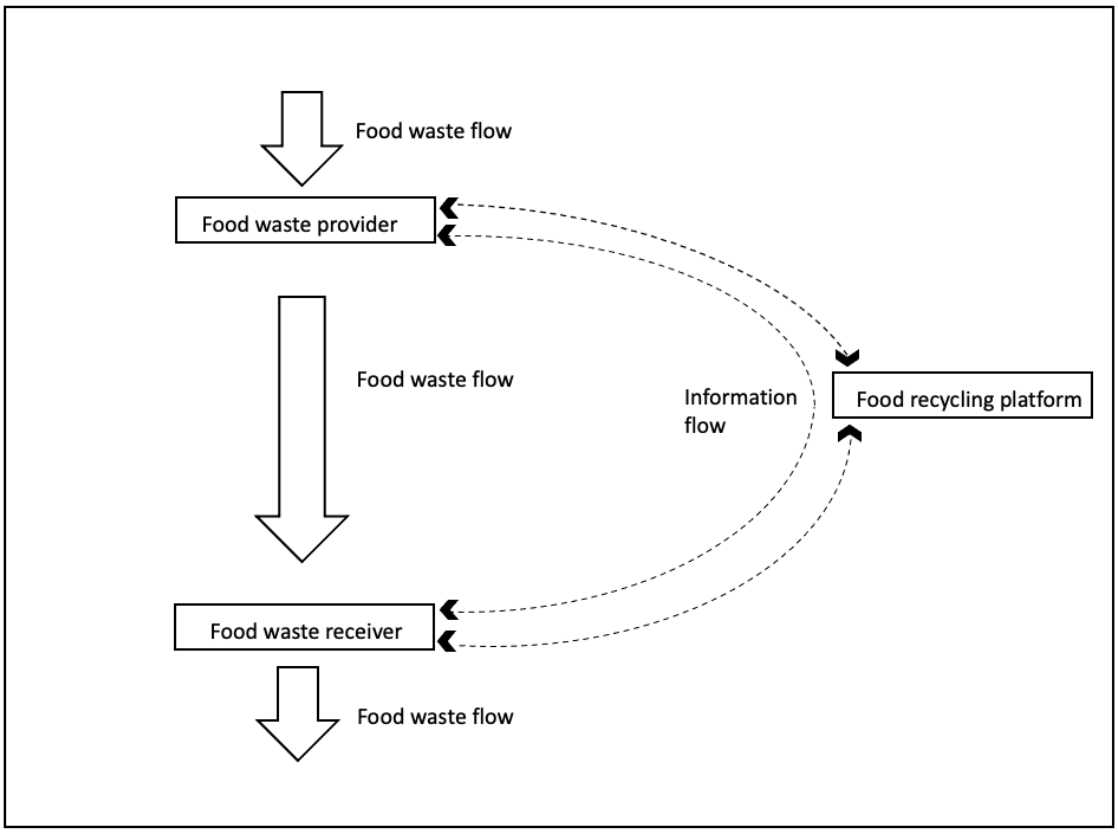

Figure 2. Food Redistribution Theoretical Model

Term	Definition
Food Waste Provider	Individuals or organisations that have surplus food and offer it through a food recycling platform.
Food Waste Receiver	Individuals or organisations that acquire surplus food through a food recycling platform.
Food Recycling Platform	Digital platforms dedicated to reducing food waste by redistributing surplus food for human consumption.
Information Flow	The extent of information exchanged between the two parties involved in food transaction activities, including relevant private information.
Food Waste Flow	The physical redistribution of surplus food through a food recycling platform.

Table 2. Key Model Definitions

Example: OLIO Application

An illustrative example of this theoretical model in action is the OLIO application. OLIO is a food-sharing platform that allows users to list surplus food products, make requests, and organise in-person transactions. The platform supports a community of two main user types: the general public and volunteers.

General Public Users: These users can post surplus food items they have and are willing to share or donate. They can also browse listings posted by others and request to pick up items that they need.

Volunteers: Volunteers play a crucial role in the OLIO ecosystem. They act as intermediaries by collecting surplus food from commercial food producers and retailers and making it available to the community. This enhances the platform's capacity to handle larger quantities of surplus food and ensures that more food can be redistributed effectively.

The interface presented to consumers when the application is opened (as shown in Figure 3) is designed to be user-friendly and intuitive. Users can easily navigate through various categories, view available food items, and communicate with providers to arrange pick-ups. This seamless interaction between food providers and receivers exemplifies the "informing, connecting, mobilising, and integrating" roles highlighted by Ciulli et al. (2019).

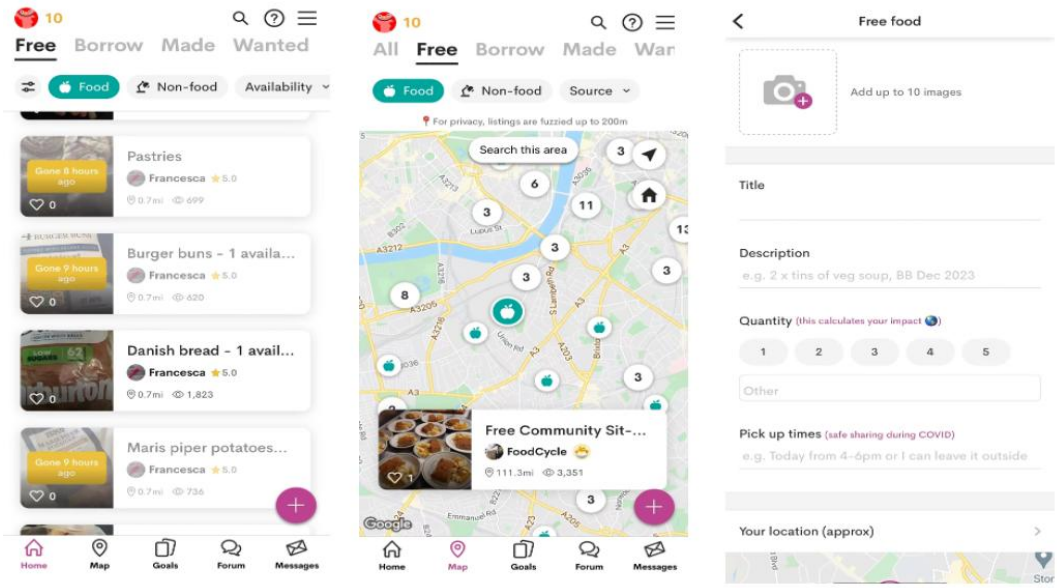

Figure 3. The Interface of OLIO's Mobile Application

OLIO's platform functionality enables users to upload detailed posts about available food items. These posts typically include multiple images of the food products, along with names, descriptions (including expiration dates), pick-up times, and location details (as shown in Figure 4). This comprehensive information helps potential recipients make informed decisions and facilitates smooth transactions. As of 2021, OLIO has amassed over 2.6 million users globally and has helped recycle more than 9.8 million servings of food. This widespread adoption and significant impact highlight the platform's effectiveness in reducing food waste and promoting sustainable food practices.

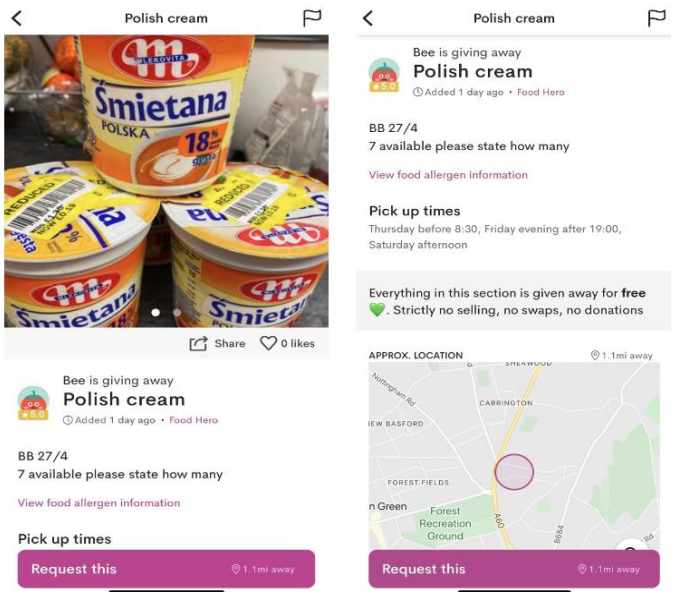

Figure 4. The Interface of OLIO's Food Post

2.3 Research Methodology

This research employs a mixed-methods approach, combining quantitative and qualitative research paradigms to achieve a comprehensive understanding of food-sharing platforms. According to Johnson et al. (2007), mixed-methods research combines aspects of both quantitative and qualitative methodologies to provide both breadth and depth of understanding, as well as corroboration. The mixed-methods approach is justified by its capacity to address the research questions from multiple perspectives, thus enhancing the validity and reliability of the findings. The qualitative phase allows for an in-depth exploration of participants' experiences, motivations, and perceptions, which are essential for understanding the contextual factors influencing food-sharing platform adoption and use. This phase involves semi-structured interviews, enabling the researcher to gather rich, detailed narratives that reveal the complexities and nuances of user behaviour. The insights gained from this phase are then used to inform the design of the quantitative phase, ensuring that the survey instruments capture relevant constructs and hypotheses. The quantitative phase, conducted after the qualitative analysis, provides the opportunity to test the generalisability of the initial findings across a larger population. This phase uses structured surveys to collect numerical data, which are subsequently analysed using statistical techniques such as descriptive analysis, factor analysis, and structural equation modelling (SEM). By quantifying relationships between variables, the quantitative phase helps to validate the themes and patterns identified in the qualitative phase, thereby offering a more robust and comprehensive understanding of the research problem.

The mixed-methods approach in this research is applied sequentially, with the qualitative study forming the foundation for the quantitative phase. This design, often referred to as an explanatory sequential design (Creswell and Plano Clark, 2011), enables the research to first explore user experiences and perceptions in depth, generating rich, contextual data (qualitative phase), and then test the broader applicability of these insights with a larger, more generalisable sample (quantitative phase) (Tashakkori and Teddlie, 2010). The explanatory sequential design is particularly suitable for this study as it allows the researcher to build on initial qualitative insights to develop more precise and targeted survey questions. This design ensures a logical flow of research activities, reducing the risk of overlooking critical factors that may not be immediately apparent in the literature. Furthermore, the sequential nature of the design facilitates the integration of findings, as the results from the qualitative phase guide the formulation of hypotheses that are subsequently tested quantitatively. This combination

provides both the depth and breadth needed to fully understand the complexities of food-sharing platforms (Bryman, 2012). By integrating qualitative and quantitative data, this research aims to produce a more holistic and nuanced understanding of the factors influencing the success of these platforms in reducing food waste (Johnson et al., 2007). This approach facilitates a more systematic explanation of phenomena, as emphasised by Zachariadis et al. (2013).

Additionally, the mixed-methods approach aligns with the study's objective of developing a holistic framework for understanding food-sharing platform adoption and sustained engagement. By incorporating both qualitative and quantitative data, the research captures not only the cognitive and rational aspects of decision-making but also the emotional, social, and contextual factors influencing user behaviour. This methodological choice thus provides a richer and more nuanced perspective on the research problem than would be possible through a single-method approach. Mixed-methods research also enhances the study's capacity to address complex, real-world phenomena such as food-sharing platforms, where technological, social, and environmental factors intersect. The combination of qualitative and quantitative insights enables the identification of both overarching trends and individual variations in user behaviour, contributing to the development of actionable recommendations for platform developers and policymakers.

In summary, the adoption of a mixed-methods approach in this research is justified by its ability to provide both depth and breadth in understanding the adoption and continued use of food-sharing platforms. The sequential design ensures a logical progression from exploratory insights to empirical testing, while the integration of qualitative and quantitative data offers a comprehensive view of the factors influencing user behaviour. This methodological choice ultimately supports the development of a well-founded and practically relevant framework for improving the effectiveness of food-sharing platforms in reducing food waste. Figure 4 below illustrates the research design.

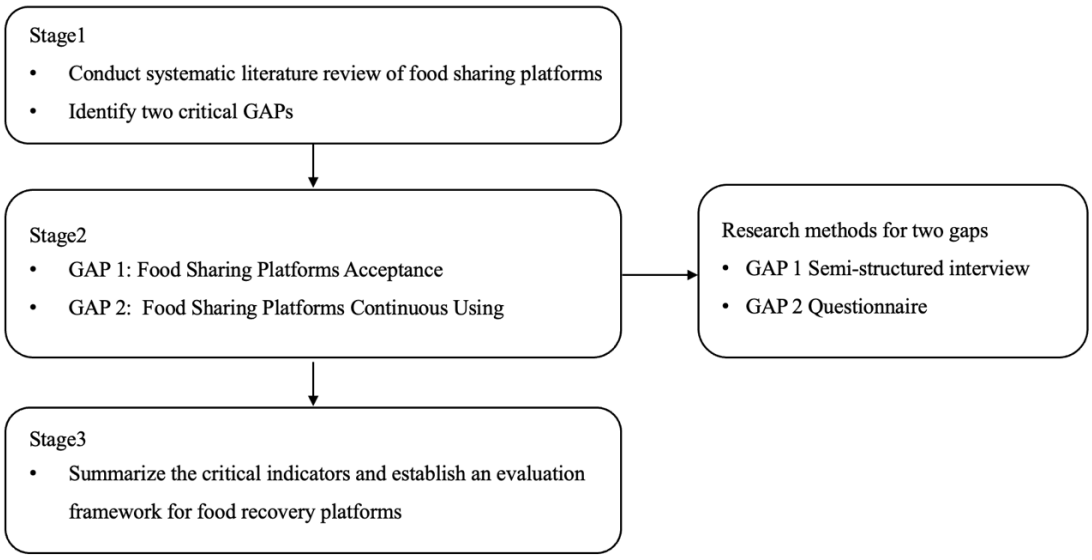

Figure 5. Research Design

2.3.1 Stage 1: Systematic Literature Review and Identification of Gaps

The first stage begins with a systematic literature review, synthesising existing research on food-sharing platforms. This process involves a comprehensive analysis of academic literature to identify prevailing trends, theoretical frameworks, and empirical findings related to food-sharing platforms. Through this review, two critical gaps are identified: (1) the factors influencing the acceptance and adoption of food-sharing platforms, and (2) the drivers behind their continuous usage. While much of the existing research focuses on platform functionalities and logistical efficiencies, there remains limited insight into user perspectives and behavioural motivations. These gaps serve as the foundation for subsequent research, ensuring that the study is grounded in relevant theoretical and empirical knowledge. By addressing these gaps systematically, this research aims to provide a more holistic understanding of how food-sharing platforms can enhance their adoption rates and long-term user retention.

2.3.2 Stage 2: Addressing the Identified Gaps

In this stage, the research directly addresses the gaps identified in the literature by conducting two separate studies. A mixed-methods approach is applied sequentially, beginning with qualitative research to explore user perspectives in depth, followed by a quantitative study to test and generalise the findings on a larger scale. The combination of qualitative and quantitative methodologies ensures that the study captures both the nuanced, contextual insights from users and the broader, statistically validated trends influencing platform adoption and engagement.

Study 1: Food Sharing Platforms Acceptance

This study focuses on understanding the factors influencing the initial acceptance of food-sharing platforms through a qualitative research approach. The study seeks to uncover users' perceptions and the underlying reasons for adopting—or not adopting—food-sharing platforms. By conducting in-depth semi-structured interviews, the research allows for a thorough exploration of personal experiences, values, and motivations, capturing insights that are often challenging to quantify. These findings will provide a foundational understanding of user behaviour, which will be later validated through quantitative analysis.

Theoretical Framework: This study is guided by the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) (Venkatesh et al., 2003), which provides a robust framework for analysing the acceptance of technology. This framework incorporates key constructs such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit, which are particularly relevant for understanding user adoption of food-sharing platforms. By applying UTAUT2, this study identifies the key psychological and social factors influencing individuals' decisions to use food-sharing services.

Methodology: Semi-structured interviews are conducted with potential and existing users of food-sharing platforms, allowing for an in-depth exploration of personal insights and experiences. This method enables participants to freely express their views while allowing the researcher to probe deeper into emerging themes. Open-ended questions focus on the perceived benefits, barriers to adoption, and the influence of contextual and social factors, offering a rich dataset that highlights the complexities of user behaviour.

Sampling and Data Collection: Participants are recruited through various channels, including online forums, social media platforms, and food sustainability communities. Recruitment aims to ensure diversity in participant demographics, capturing insights from a broad range of users. Interviews continue until data saturation is reached, ensuring a comprehensive understanding of recurring themes and behavioural patterns (Glaser and Strauss, 2017).

Data Analysis: Thematic analysis is employed to identify patterns and themes within the collected data. This approach enables the researcher to systematically organise and interpret qualitative data, providing insights into key drivers and barriers of platform adoption. The analysis highlights common motivations, concerns, and experiences that shape user decisions

regarding food-sharing platforms.

Expected Outcomes: The qualitative findings are expected to identify key factors influencing users' acceptance of food-sharing platforms, particularly in the context of sustainability and food waste reduction. These insights will inform strategies for improving user engagement, platform design, and policy interventions to promote widespread adoption.

Study 2: Food Sharing Platforms Continuous Usage

The second study investigates the factors influencing the continuous usage of food-sharing platforms, using a quantitative approach to test hypotheses and generalise findings across a broader population. This phase complements the insights gathered from the qualitative study by providing measurable data on user behaviour and platform performance. The study employs questionnaires to explore what happens after consumers initially engage with food-sharing platforms. In theory, the food waste collected through these platforms should be redistributed and consumed, contributing to circular economy goals. However, if consumers stop using the platforms after only a few interactions, the sustainability objectives of these platforms will not be fully realised. Therefore, it is crucial to examine the factors that drive long-term usage. After initial interactions, perceived value plays a significant role in shaping consumer satisfaction. The food offered on these platforms is often "suboptimal"—nearing or past its best-before date, or differing from standard product expectations. These characteristics may reduce the perceived value of the platform, diminishing satisfaction and, in turn, reducing consumers' willingness to continue using the platform.

Theoretical Framework: Study 2 draws on the concepts of perceived value and perceived risk to investigate their impact on user satisfaction and continuous engagement with food-sharing platforms (Nasution and Mavondo, 2008). Perceived value refers to users' evaluation of the benefits they receive from engaging with these platforms, while perceived risk relates to concerns over food quality, safety, and platform reliability. These constructs are crucial in understanding why some users continue using food-sharing platforms while others discontinue their engagement.

Methodology: A structured questionnaire is distributed to a broad sample of users from popular food-sharing platforms such as OLIO, Too Good To Go, and Food Cloud. The survey instrument measures key variables such as perceived value, perceived risk, user satisfaction,

and intentions to continue using the platform. The study employs statistical analysis techniques to identify relationships between these variables and test their impact on sustained platform engagement.

Sampling and Data Collection: A pre-test is conducted to ensure the clarity and reliability of the survey items. The final survey is distributed through Amazon Mechanical Turk (MTurk), targeting users with prior experience using food-sharing platforms. By leveraging an online panel, the study ensures a diverse and representative sample, increasing the generalisability of the findings to a wider population.

Data Analysis: The collected data will be analysed using statistical methods to identify patterns and relationships between the variables. Descriptive statistics will provide an overview of the data, offering insights into the sample characteristics and distributions. For hypothesis testing and examining the factors influencing continuous usage, Partial Least Squares Structural Equation Modelling (PLS-SEM) will be employed. PLS-SEM is particularly suitable for this study as it allows for the simultaneous analysis of complex relationships between multiple variables, even when the data may not adhere to strict normality assumptions. This method will enable the testing of the proposed hypotheses while providing insights into the direct and indirect effects of perceived value, perceived risk, and user satisfaction on the continuous use of food-sharing platforms.

Expected Outcomes: This study aims to identify the key determinants of long-term user retention on food-sharing platforms. By understanding the factors that encourage sustained engagement, the findings will support strategies for improving user retention, enhancing platform trust, and promoting the broader sustainability objectives of food-sharing initiatives.

2.3.3 Stage 3: Establishing an Evaluation Framework

The final stage of the research integrates the findings from both studies to develop an evaluation framework for food-sharing platforms. This framework consolidates the critical indicators of platform acceptance and continuous usage, providing a structured tool for assessing the performance, sustainability, and long-term viability of food-sharing platforms. By synthesising qualitative insights with quantitative evidence, the framework offers actionable recommendations for platform developers, policymakers, and stakeholders seeking to enhance the effectiveness of these platforms in addressing food waste. This integrated approach ensures

that the study's conclusions are not only theoretically robust but also practically relevant for advancing sustainable food-sharing initiatives.

Chapter 3. Systematic Literature Review - Food Sharing Platforms

3.1 Introduction

Food-sharing platforms have emerged as innovative solutions to address the pressing issues of food waste and food insecurity. By utilising digital technologies, these platforms connect surplus food with those in need, promoting sustainability and reducing environmental impact. This literature review systematically explores and summarises the existing body of research on food-sharing platforms, identifying sustainable innovations and practices within this domain. The review aims to uncover the theoretical foundations, methodological approaches, and practical applications of these platforms through a structured methodology that ensures the reliability and accuracy of the findings. Following established guidelines (Baumeister and Leary, 1997; Webster and Watson, 2002), comprehensive searches were conducted in databases such as Web of Science, ScienceDirect, and SpringerLink Online Libraries, employing the systematic literature review (SLR) method for its capacity to synthesise fragmented knowledge and contribute to new theory building (Tranfield et al., 2003; Denyer and Tranfield, 2009).

Given the interdisciplinary nature of food-sharing platforms, the review adopts a broad and inclusive scope, integrating research from fields such as sustainability, technology, consumer behaviour, and social innovation. The primary research questions guiding this review are: 1) What is the current state of research on food-sharing platforms? and 2) What are the identified research gaps and future directions? By addressing these questions, the review aims to provide a holistic understanding of the sustainable development of food-sharing platforms and identify areas for future research. The literature search process involves identifying and screening a large number of publications, followed by a detailed analysis of selected papers. Both descriptive and thematic analyses are conducted to categorise publications based on characteristics such as year, journal title, and research methodologies. Thematic analysis is employed to identify and synthesise key themes and patterns in the literature, providing a structured and comprehensive examination of food-sharing platforms.

In the Key Findings and Discussions section, the review highlights several critical aspects of food-sharing platforms, including their operational mechanisms, systems of collaboration, and the evolution of digital platforms for food surplus redistribution. It also examines supply chain

models and the roles of various stakeholders within these platforms, discussing their impact on environmental, social, economic, and political dimensions. Despite the potential benefits, food-sharing platforms face significant challenges.

This chapter presents a comprehensive review of existing literature on food-sharing platforms, their role in food waste reduction, and user acceptance theories. It identifies key gaps in knowledge and theoretical limitations. The gaps identified in Chapter 3 provide the foundation for the qualitative study in Chapter 4, which explores consumer perceptions of food-sharing platforms through interviews. The findings from the literature review help refine the research focus and formulate the interview questions.

3.2 Background

The growing prominence of food-sharing platforms arises against the backdrop of two pressing global challenges: food waste and food insecurity. In recent years, food waste has become an increasingly critical environmental, economic, and social issue. The United Nations Environment Programme (2021) estimated that approximately 931 million tonnes of food are wasted globally each year, representing nearly 17% of total global food production. This waste significantly contributes to greenhouse gas emissions, depletes valuable resources such as land, water, and energy, and undermines global efforts to achieve sustainability. At the same time, food insecurity continues to affect millions of people worldwide. The Food and Agriculture Organization (FAO) reports that as many as 805 million people suffer from hunger and malnutrition, highlighting a profound disconnect between food wastage and access to sufficient, nutritious food.

Addressing these dual challenges is imperative for the fulfilment of the United Nations Sustainable Development Goals (SDGs), particularly Goal 2 (Zero Hunger) and Goal 12 (Responsible Consumption and Production). Reducing food waste while simultaneously ensuring equitable access to food are vital components of these global development objectives. However, traditional food recovery and redistribution efforts, such as food banks and community kitchens, often face limitations in terms of scale, reach, and long-term sustainability. As a result, innovative solutions are needed to tackle the inefficiencies in food production, distribution, and consumption.

In this context, food-sharing platforms have emerged as a promising solution to reduce food waste and alleviate food insecurity. Rooted in the principles of the sharing economy and circular economy, food-sharing platforms aim to create sustainable consumption patterns by redistributing surplus food to individuals in need (Ciulli et al., 2020). These platforms leverage digital technologies to connect businesses, organisations, and individuals with excess food to consumers, often at little or no cost, creating a more efficient system for food redistribution. Examples such as Too Good To Go, OLIO, and Food Cloud have demonstrated the potential for such platforms to foster community engagement, minimise waste, and contribute to environmental sustainability.

However, despite the initial successes of food-sharing platforms, significant gaps remain in our understanding of their long-term impact and sustainability. Much of the existing literature has focused on the operational mechanisms and business models of these platforms, with limited attention paid to the social, behavioural, and technological factors that drive user engagement and platform effectiveness (Michelini et al., 2018). While these platforms offer the potential to address both environmental and social goals, their widespread adoption and long-term sustainability remain uncertain. Issues such as user trust, platform convenience, food safety concerns, and the suboptimal nature of redistributed food may affect users' willingness to engage with and continue using these platforms over time.

To address these gaps, this research aims to conduct a comprehensive literature review of the current research on food-sharing platforms. A literature review approach is particularly suited to synthesising fragmented knowledge from multiple fields, including sustainability, technology adoption, and consumer behaviour. By drawing on interdisciplinary perspectives, this research seeks to identify key themes, patterns, and research gaps in the existing literature. This review not only explores the technological, operational, and behavioural drivers of food-sharing platform success but also seeks to uncover sustainable innovations and practices that can inform future developments in this field.

3.3 Methodology

This study seeks to undertake an in-depth review of various research fields related to food-sharing platforms, exploring, and summarising the existing literature to uncover sustainable innovations and practices. Consequently, a literature review is considered the most appropriate research method for this endeavour. A literature review is a systematic approach for searching,

collecting, and synthesising previously published literature, laying the groundwork for the development of theoretical research (Baumeister and Leary, 1997).

As a systematic research method, the literature review must adhere to strict standards and rigorous procedures to ensure reliability and accuracy. Researchers must apply clear logic and follow a reasoned process throughout. The value of a literature review, like other research methodologies, is reflected in the choice of topics, the thoroughness of the work undertaken, the findings, and the overall quality of the review (Moher et al., 2009). Given that food-sharing platforms intersect with multiple research domains, the methodological choices for conducting a literature review are particularly nuanced. As an emerging topic, the objective of this literature review is not to cover all existing articles but to integrate diverse research perspectives and opinions to form initial conceptualisations and theoretical models relevant to the development of this field.

A systematic literature review (SLR) was selected as the most appropriate approach for this research for various key reasons. Firstly, an SLR is invaluable for synthesising and refining fragmented Insights derived from previous research, contributing to the creation of new insights and the development of theoretical frameworks (Meredith, 1993; Tranfield et al., 2003). Secondly, it helps mitigate researcher bias and errors by providing robust, objective observations and ensuring the greatest level of replicability achievable (Denyer and Tranfield, 2009). Thirdly, the SLR is a widely adopted methodology across various research fields, including food safety regulations (Rao et al., 2021), management of agri-food supply chains (AFSC) (Fernqvist and Göransson, 2021), and social innovation (Foroudi et al., 2021). In this study, we utilise a systematic literature review approach to identify, select, assess, and synthesise the existing research on food-sharing platforms in a thorough, scholarly, and transparent way (Crossan and Apaydin, 2010). From a methodological perspective, an SLR enables researchers to minimise bias and errors, outline clear procedures for replication, and systematically accumulate knowledge within a particular field, thereby enhancing the standard of the review process, the validity of the findings, and the generalisability of the results (Kauppi et al., 2018; Kraus et al., 2020).

The SLR methodology enabled us to critically review and analyse the current body of research on food-sharing platforms. Webster and Watson (2002) argue that a topic-centric review is more valuable than one confined to select high-level journals. Therefore, this research is not limited

to a narrow set of journals but follows the systematic steps proposed by Denyer and Tranfield (2009), complemented by content analysis. This approach encompasses all critical stages of the literature review process. This research follows the five-step approach outlined by Denyer and Tranfield (2009) to comprehensively search for pertinent research on social innovation and food-sharing platforms, identify current gaps in the literature, and suggest prospective avenues for future research.

3.3.1 Scope Definition

The first step of a systematic literature review (SLR) is to establish a clear focus that helps minimise prejudice, inaccuracies, and uncertainty (Light and Pillemer, 1984). A crucial aspect of this stage involves formulating specific, well-defined research questions that guide the review process. As Brocke et al. (2009) highlight, determining the appropriate scope and structure of the review presents a significant challenge. The scope outlines the boundaries of the review, including the range of topics covered and the depth of analysis. Given the interdisciplinary and evolving nature of food-sharing platforms, it is essential to strike a balance between inclusivity and manageability when defining the review's scope. Food-sharing platforms intersect with several academic disciplines, including sustainability, technology, consumer behaviour, and social innovation. Consequently, the literature review must adopt a broad and comprehensive approach to fully understand the sustainable development of these platforms. By integrating diverse research perspectives, this review seeks to reflect the complexity and multifaceted nature of food-sharing platforms. To address this, the following research questions (RQs) have been formulated:

RQ1: What is the current state of research on food-sharing platforms?
RQ2: What are the research gaps and future research directions identified from the findings?

The literature review research questions (RQs) are designed to synthesise existing knowledge about food-sharing platforms, thereby providing a foundation for addressing the main research questions. Specifically, by reviewing the existing literature, this study will identify the theoretical frameworks, methodologies, and empirical studies that have explored factors related to the adoption and use of food-sharing platforms. This directly informs **Main Research Question 1** *(What are the key factors that influence the adoption and initial user acceptance of food-sharing platforms?)*, which aims to understand the factors driving adoption and initial user acceptance. For instance, research on technology acceptance models, consumer behaviour,

and sustainability will help identify factors such as perceived ease of use, trust, and convenience, which are already recognised as influencing user adoption.

Furthermore, understanding what is missing or underexplored in the literature is essential for addressing **Main Research Question 2** (*What are the key factors that impact the sustained engagement and long-term performance of food-sharing platforms?*), which focuses on sustained user engagement and long-term platform performance. The literature review will highlight areas where existing research has not sufficiently addressed factors such as long-term user satisfaction, platform retention, and the role of technological advancements. These gaps will help guide future empirical studies aimed at identifying and measuring the determinants of long-term user engagement.

By addressing the literature review RQs, this SLR provides not only a comprehensive overview of the current state of research on food-sharing platforms but also highlights the areas that require further investigation to answer the main research questions. This connection ensures that the literature review informs and complements the overall research objectives, providing the necessary theoretical grounding and identifying key gaps to be explored in the empirical phases of the study.

Topic Conceptualisation

The second step of an SLR is to develop a compilation of key contributions pertinent to the review questions (Denyer and Tranfield, 2009). To achieve this, three databases were selected to ensure a thorough search of relevant publications:

1.Web of Science

2.ScienceDirect

3.SpringerLink Online Libraries

These databases were chosen because they are among the world's leading repositories for business research, encompassing extensive collections of journals, books, and conference proceedings across the sciences, social sciences, arts, and humanities. Additionally, they are frequently utilised in literature reviews.

Ensuring Reliability and Validity

Reliability and validity are crucial factors in evaluating research in systematic literature reviews (Brocke et al., 2009). Validity pertains to the extent to which the chosen publications

are relevant to the subject of the review. This step connects the conceptualisation of the topic with the goal of the literature search, aiming to identify the most relevant search keywords. Selecting a clear set of keywords is imperative, as they significantly influence the relevance and quality of the literature retrieved.

Food-sharing platforms, particularly those aimed at reducing food waste, lack a universally accepted definition, though their function is widely recognised. In the literature, these platforms are referred to by various terms, reflecting their diverse purposes and functionalities:

- Food Waste Mobile Applications (FWMAs) (Apostolidis et al., 2021)
- Mobile Food-Sharing Applications (Farr-Wharton et al., 2014; Harvey et al., 2020)
- Food Waste Management Applications (Fadhil, 2018)
- Digital Food Waste Reduction Applications (Strotmann et al., 2022)
- Food Redistribution Applications (Hanson and Ahmadi, 2021)
- Household Food-Management Applications (Phiri and Trevorrow, 2019)

These varied terminologies highlight the diverse approaches and innovations within the field of food-sharing platforms. In line with previous literature reviews on food-sharing platforms (e.g., Zhao et al., 2023; Hong et al., 2024; Puram et al., 2023), a combination of keywords was employed to ensure extensive coverage of the existing literature.

The keywords in this study consist of two groups of phrases. The first group includes "Digital Platform," "Platform," "Mobile Applications," "Applications," "Software," "Electronic Market," and "Multi-Sided Platform." These terms are considered standard and can be used interchangeably. The second group includes "Food Sharing," "Food Waste," "Food Save," "Food Redistribution," "Food Waste Management," and "Food Waste Reduction." The study focused on the title, abstract, and keyword fields, as this approach is most frequently employed in business research (Christofi et al., 2017; Baima et al., 2020; West and Bogers, 2014). This approach is essential because food-sharing platforms, as a form of social innovation, are highly heterogeneous, experimental, and can be driven by projects, companies, or societal initiatives. Thus, employing a wide array of relevant keywords helps to identify a comprehensive set of literature.

Following Hong et al. (2024), the period for locating relevant publications across the five

databases was set from 2007 to 2024. The starting point of 2007 was chosen as it marks the launch of the first iPhone, which signified the beginning of the smartphone and mobile revolution—an integral factor in the development and adoption of mobile applications, including those used for food sharing.

Validity Testing

The validity of the research was ensured through several measures:

1. Testing Predetermined Keywords: Ensuring that the selected keywords effectively capture the relevant literature.
2. Testing Databases: Verifying that the chosen databases cover the necessary breadth and depth of the subject matter.
3. Forward and Backward Searches: Performing forward and backward citation searches to identify additional relevant studies and ensure comprehensive coverage.

These steps collectively ensure that the literature review is thorough, reliable, and valid, providing a robust foundation for synthesising existing research and identifying gaps and future directions in the field of food-sharing platforms.

3.3.2 Search Process

Inclusion/Exclusion Criteria

To ensure an effective and comprehensive collection of literature, a set of evaluation criteria were established to exclude irrelevant documents. The following criteria have been established:

1. Language: Only publications written in English were included. This decision was made because English is the predominant language for scholarly communication, allowing the research to reach a broader audience. Additionally, excluding non-English literature helps to reduce regional biases that might arise from differences in research topics.

2. Type of Publications: The review included publications from peer-reviewed journals, book chapters, and conference proceedings, instead of concentrating exclusively on peer-reviewed journal articles. While a stringent publication selection process might enhance the study's quality, it could also limit originality and innovative aspects (Easterby-Smith et al., 2012). Given that this study aims to explore various digital platforms adopted for food redistribution, a broader range of reference types was included.

Searching Process

Step 1: The initial search employed specified keywords across three selected databases—Web of Science, ScienceDirect, and SpringerLink—covering literature from 2007 onwards. This search yielded a total of 3,119 articles, distributed as follows: Web of Science (1,269 articles), ScienceDirect (755 articles), and SpringerLink (1,095 articles). The search included keywords that were carefully selected to capture literature related to platforms, sustainability, and supply chain management practices. After collecting the articles, the first step was to eliminate duplicates. Many of the articles appeared across multiple databases. A systematic process of removing these duplicates was undertaken, reducing the total number of articles to 1,247 unique papers. The removal of duplicates was crucial to ensure the integrity of the data pool and to avoid redundancy in the subsequent review stages.

Step 2: The second stage of the process involved manually screening the titles and abstracts of the remaining 1,247 articles. At this stage, articles that did not focus on platforms or sustainable management practices were excluded. For example, papers that dealt only with general technological platforms or did not address the environmental or supply chain management aspects were discarded. This process was aimed at refining the focus of the review and ensuring that only publications directly relevant to the core themes of this research—platforms and sustainable or green supply chain management—were considered. Each title and abstract was carefully reviewed by the researcher to determine whether the paper addressed relevant topics, such as the implementation of sustainable management practices through platforms or the role of technology in supporting green supply chain management. As a result of this manual screening process, 128 articles were deemed suitable for full-text review.

Step 3: The third stage of the selection process involved a thorough full-text review of the 128 remaining articles. Each paper was read in its entirety to ensure that it provided a meaningful contribution to the study's objectives. This step was essential in verifying the relevance of each article and confirming that it addressed the specific research themes of interest. During this review, papers were excluded if they lacked a direct connection to platforms and sustainability or if they only superficially touched on these topics without offering substantial insights. This careful evaluation led to the exclusion of 56 articles, leaving 72 articles that were considered highly relevant for inclusion in the study.

Step 4: To ensure the comprehensiveness and rigour of the literature review, backward and forward citation tracking methods were employed. The backward search involved examining the reference lists of the selected 72 articles to identify any additional relevant studies that may have been overlooked during the initial database search (Webster and Watson, 2002). This backward search is a well-established method in systematic reviews, as it allows researchers to capture foundational or highly influential studies that may not have appeared in the initial keyword search. Additionally, a forward search was conducted by checking which subsequent papers had cited the selected articles, further identifying more recent research that could contribute to the understanding of the topic. This backward and forward citation process resulted in the identification of six additional papers that were deemed relevant for the review, bringing the final total to 78 articles. These additional papers provided further insights into the key themes of platforms, sustainability, and green supply chain management, ensuring that the literature review was both comprehensive and up-to-date. Figure 6 illustrates the systematic process of article filtering and selection, detailing each step from the initial search to the final inclusion of relevant studies.

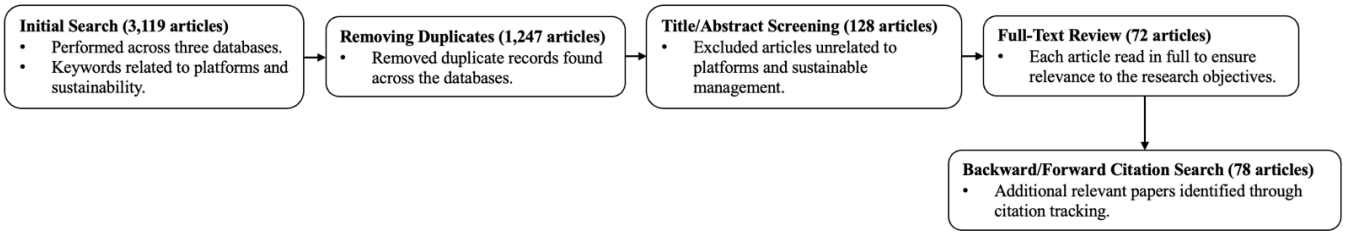

Figure 6. Systematic Article Filtering and Selection Process

3.3.3 Analysis and Synthesis

Descriptive Analysis

In the descriptive analysis, the chosen publications were classified according to various attributes, such as the publication year, journal name, authors' nationalities, and the research methods utilised. These methodologies encompass theoretical and conceptual works, case studies/interviews, surveys, modelling studies, and literature reviews (Seuring and Müller, 2008). Relevant information from each paper was meticulously recorded in an Excel file to facilitate comprehensive analysis.

Thematic Analysis

Thematic analysis was employed to generate themes by analysing, summarising, and linking the content of the papers. This method is widely used in systematic literature reviews (SLRs) for topics such as social media value generation (Rashid et al., 2019) and knowledge management practices (Bornbaum et al., 2015). Thematic analysis is particularly effective for analysing the various perspectives presented in research papers. In this research, 78 papers were collected for thematic analysis, providing diverse perspectives on food-sharing platform research. The structured process of thematic analysis allows for the consolidation and integration of findings from multiple qualitative studies. Themes are understood as key concepts that outline the central focus of each author's work (Ryan and Bernard, 2003).

To conduct the thematic analysis, we followed the procedures outlined by Nowell et al. (2017), which emphasise establishing reliability at every stage of the analysis. Thematic analysis consists of four essential steps:

1. Familiarisation: This initial step involves immersing oneself in each paper through thorough and repeated reading to gain a deep understanding of the content.
2. Coding: Each paper was coded line-by-line, identifying significant words, phrases, and sentences that relate to the research questions and objectives.
3. Identifying and Naming Themes: Major themes were identified and named based on the coded data. Themes represent the key ideas and patterns that emerge from the data.
4. Grouping Articles by Themes: Articles were grouped based on the similarity of themes, allowing for a coherent organisation of findings and insights.

All articles were coded and iterated by a researcher using NVivo 13 software. This approach ensured a systematic and rigorous analysis, allowing themes to emerge that represented the core ideas, arguments, and conceptual links identified across the literature. This method provided a holistic understanding of each article and facilitated the integration of diverse perspectives on food-sharing platforms (Linan and Fayolle, 2015). Upon completing the descriptive and thematic analyses, the results were systematically organised to address the research questions. This process involved synthesising the findings to not only answer the initial research questions but also to identify gaps and suggest future research directions.

Figure 7 illustrates all the steps involved in the search and selection of articles for this research. This meticulous process ensured a robust and comprehensive collection of relevant literature,

providing a solid foundation for the subsequent analysis and synthesis of research on food-sharing platforms and their role in sustainable management practices.

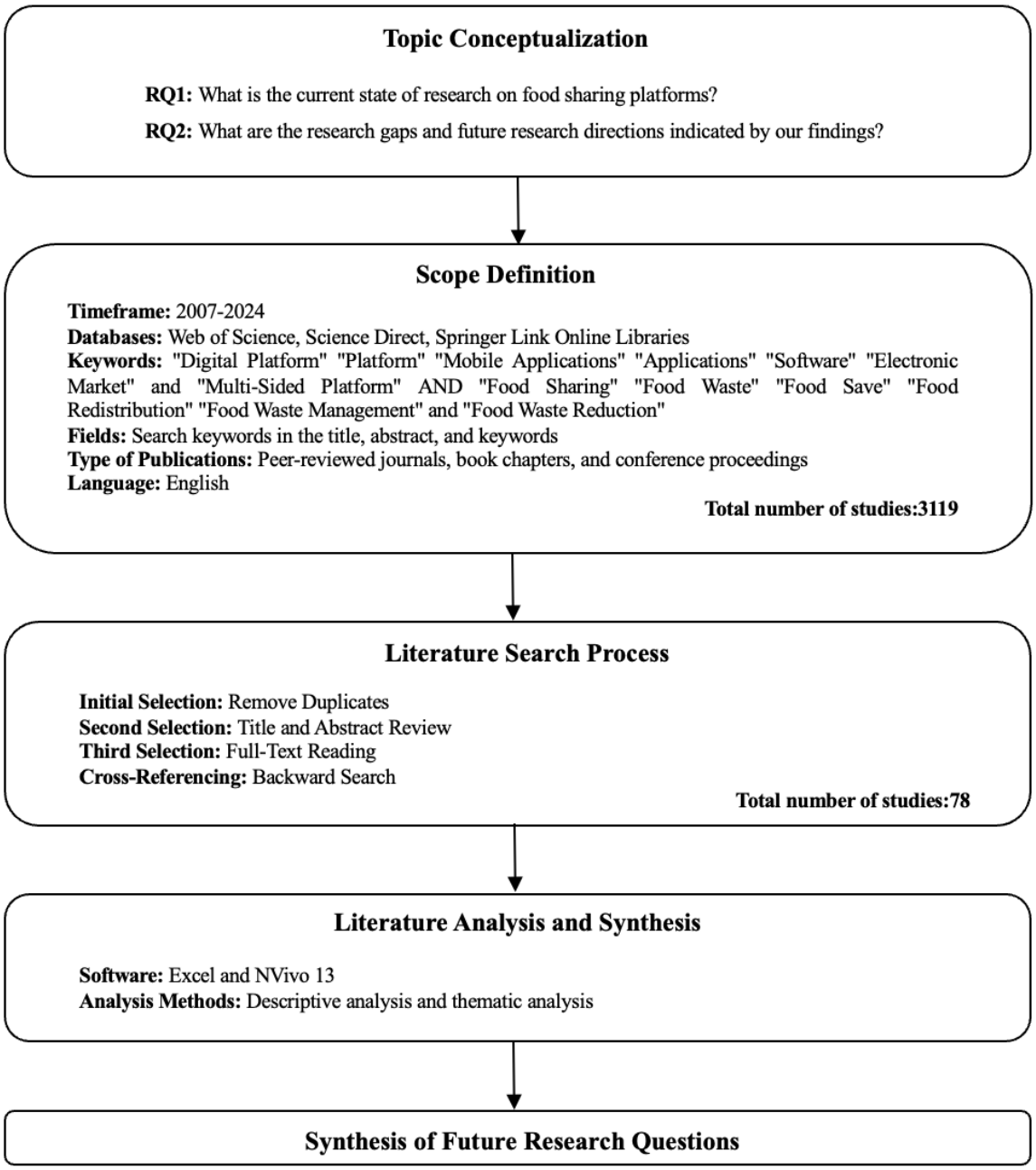

Figure 7. A Summary of the Systematic Literature Review Process

3.4 Findings and Discussion

This section begins by outlining the descriptive analysis, highlighting the authors' geographical affiliations, data collection methodologies, the annual count of reviewed studies and the distribution of publications are presented. A full list of the publications can be found in Supplementary Appendix A. Regarding the thematic analysis, various research topics and perspectives on food-sharing platforms are classified and synthesised.

3.4.1 Descriptive Analysis

1. Geography

In terms of author affiliations, our analysis reveals a wide geographical distribution across various institutions globally (Figure 8). In Europe, the predominant affiliations are with institutions in Italy (n=17, 22%), the United Kingdom (n=12, 15%), Finland (n=6, 8%), Austria (n=5, 6%), the Netherlands (n=3, 4%), and Germany (n=3, 4%). Additionally, there are affiliations from Ireland (n=2, 3%), Sweden (n=2, 3%), Norway (n=2, 3%), Greece (n=1, 2%), France (n=1, 1%), Denmark (n=1, 1%), and Ukraine (n=1, 2%).

Despite the severe food waste (FW) issue in Australia and New Zealand—for instance, the average Australian household wastes approximately 300 kilograms of food per individual each year (Food Bank, 2021), research on this topic has not garnered significant attention in these countries, with only one publication from Australia (n=1, 1%) and none from New Zealand (n=0). Similarly, research on food-sharing platforms has not been prominent in the USA (n=3, 4%) and Brazil (n=3, 4%). Although China (n=2, 2%) and India (n=2, 2%) are identified as major producers of household food waste globally (Statista, 2021), the social innovation perspective on reducing food waste has not received substantial scholarly attention in these countries. Other countries with author affiliations include Canada (n=1, 1%), Israel (n=2, 3%), Indonesia (n=1, 1%), and Japan (n=1, 1%).

The study's selected publications predominantly originate from research institutions in Europe (n=56, 72%), followed by Asia (n=13, 17%), North America (n=4, 5%), South America (n=3, 4%), Australia (n=1, 1%), and Africa (n=1, 1%). The significant disparity between Europe and other continents can be attributed to the various policies, research programmes, strategies, and agreements implemented by the European Union (EU) aimed at reducing food waste, as highlighted by Moraes et al. (2021).

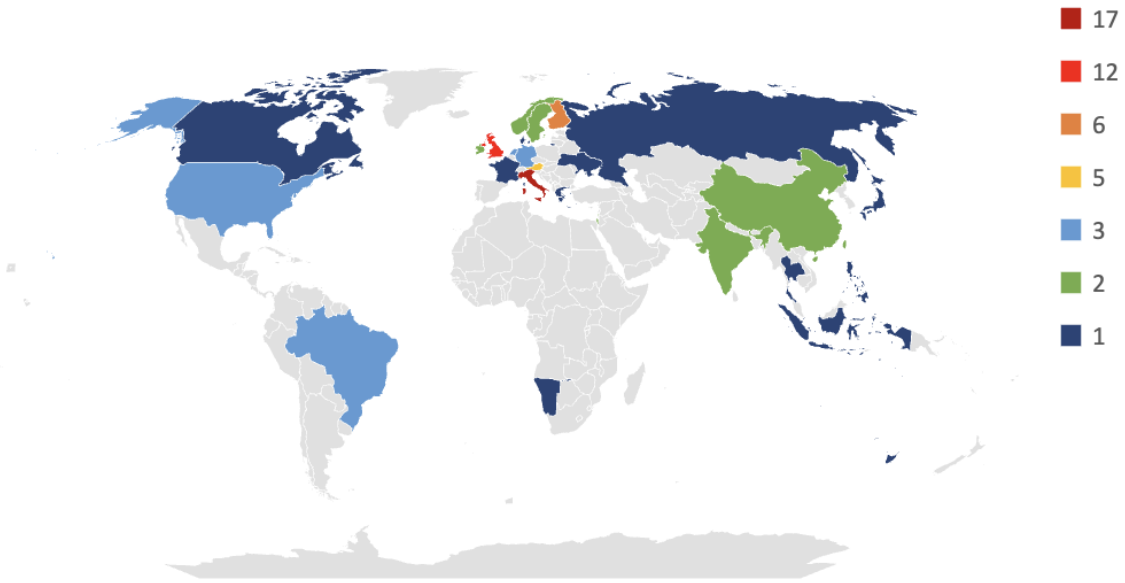

Figure 8. Global Distribution of Author Affiliations

Continent	Country	Number of articles	Total
Europe	Italy	17	56
	UK	12	
	Finland	6	
	Austria	5	
	Germany	3	
	Netherlands	3	
	Ireland	2	
	Norway	2	
	Sweden	2	
	Denmark	1	
	France	1	
	Greece	1	
	Ukraine	1	
North America	USA	3	4
	Canada	1	
South America	Brazil	3	3
Asia	China	2	13
	India	2	
	Israel	2	
	Taiwan	2	
	Indonesia	1	
	Japan	1	
	Philippines	1	
	Russia	1	
	Thailand	1	
Australia	Australia	1	1
Africa	Namibia	1	1

Table 3. Countries Represented by Author Affiliations

2. Data Collection Methodology

The categorisation of data collection methodologies into 14 distinct groups was undertaken to systematically elucidate the approaches employed by researchers in the investigation of food-sharing platforms. Each methodology offers unique strengths and insights, contributing to a comprehensive understanding of the phenomenon under study. Table 4 below provides detailed definitions for each data collection method.

Data Collection Methodology	Description
Literature Review	Synthesis and analysis of existing research and scholarly literature relevant to food sharing platforms.
Big Data Analytics	Analysis of extensive datasets to discern patterns, trends, and insights pertaining to food sharing activities.
Case Study	In-depth, contextually rich examination of specific food sharing platforms or initiatives.
Case Study, Interviews	Combination of case study research with qualitative interviews to provide deeper insights.
Case Study, Interviews, Observation, Research-related Documents	Integration of multiple data collection methods, including interviews, observation, and analysis of research-related documents.
Case Study, Research-related Documents	Analysis of research-related documents, such as reports and articles, in conjunction with case study research.
Interview	Conducting structured or semi-structured conversations with key stakeholders to gather qualitative data on food sharing.
Interviews, Observation, Research-related Documents	Combination of interviews with observation and analysis of research-related documents.
Survey	Administering structured questionnaires to a sample of platform users or stakeholders to gather quantitative data.
Survey, Interview	Combination of survey research with qualitative interviews to triangulate data from different sources.
Modelling	Development of mathematical or computational models to simulate and analyse the dynamics of food sharing platforms.
Experiment	Designing controlled studies to test hypotheses or evaluate the effectiveness of interventions within food sharing platforms.
Focus Group Discussion	Facilitating group interactions and discussions among platform users or stakeholders to gather qualitative insights.
Research-related Documents	Analysis of various research-related documents, such as reports and academic papers, as part of the research process.

Table 4. Definitions of Data Collection Methodologies

Research on food-sharing platforms employs a diverse array of data collection methodologies, reflecting the complexity and interdisciplinary nature of the field. Among the reviewed articles, several prominent methods stand out:

Case studies are the most frequently used method, featured in a total of 27 articles, either alone (n=9, 12%) or in combination with other methods such as interviews, observation, and research-related documents (n=18, 23%). As emerging digital platforms, food recovery platforms are still evolving, making case analysis a primary approach for researchers to explore their development. This preference underscores the importance of in-depth, qualitative insights into the operational dynamics and strategic decision-making processes of food-sharing platforms.

Interviews are another significant method, employed in 16 articles, either as a standalone method (n=4, 5%) or in combination with other methods such as case studies and research-related documents (n=12, 15%). This approach provides rich, qualitative data directly from stakeholders involved in food-sharing initiatives, such as platform administrators, users, and community members. The development of food-sharing platforms is closely linked to the participation of consumers, merchants, and other stakeholders. By using interviews, researchers can gain a deeper understanding of the motivations, concerns, and considerations of these participants.

Surveys represent another important tool for data collection, used in six articles either alone (n=4, 5%) or in combination with interviews (n=2, 3%). Surveys provide a quantitative perspective on user demographics, behaviours, and attitudes towards food sharing. This method allows researchers to identify broader trends and patterns across larger populations, offering valuable statistical insights that complement the qualitative findings from case studies and interviews. Big Data Analytics (n=7, 9%) and Modelling (n=6, 8%) are employed to analyse large datasets and simulate various scenarios related to food waste reduction. These methods offer valuable insights into the broader impacts of food sharing platforms and can help predict future trends and outcomes. However, their usage is less frequent compared to qualitative methods, indicating an area for potential growth.

Literature reviews (n=10, 13%) are widely utilised, offering a comprehensive overview of existing research related to food sharing platforms and food redistribution activities, thereby

helping to contextualise the findings of primary studies. Experimental Research and Focus Group discussions are notably underrepresented, each featured in only one article (1%). This suggests that these methodologies are currently underutilised in the study of food sharing platforms, presenting opportunities for further exploration and application.

Overall, the diverse range of data collection methods employed in researching food sharing platforms underscores the need for both qualitative and quantitative approaches to fully capture the complexities of these systems. By integrating various methodologies, researchers can gain a more nuanced understanding of how food sharing platforms operate, their impacts on food waste reduction, and their broader social and environmental implications.

Data Sources	**Number of Articles**
Literature Review	10
Big Data Analytics	7
Case Study	9
Case Study, Interviews	8
Case Study, Interviews, Observation, Research-related Documents	7
Case Study, Research-related Documents	3
Interview	4
Interviews, Observation, Research-related Documents	4
Survey	4
Survey, Interview	2
Modelling	6
Experiment	1
Focus Group Discussion	1
Research-related Documents	6

Table 5. Categorisation of Data Collection Methodologies

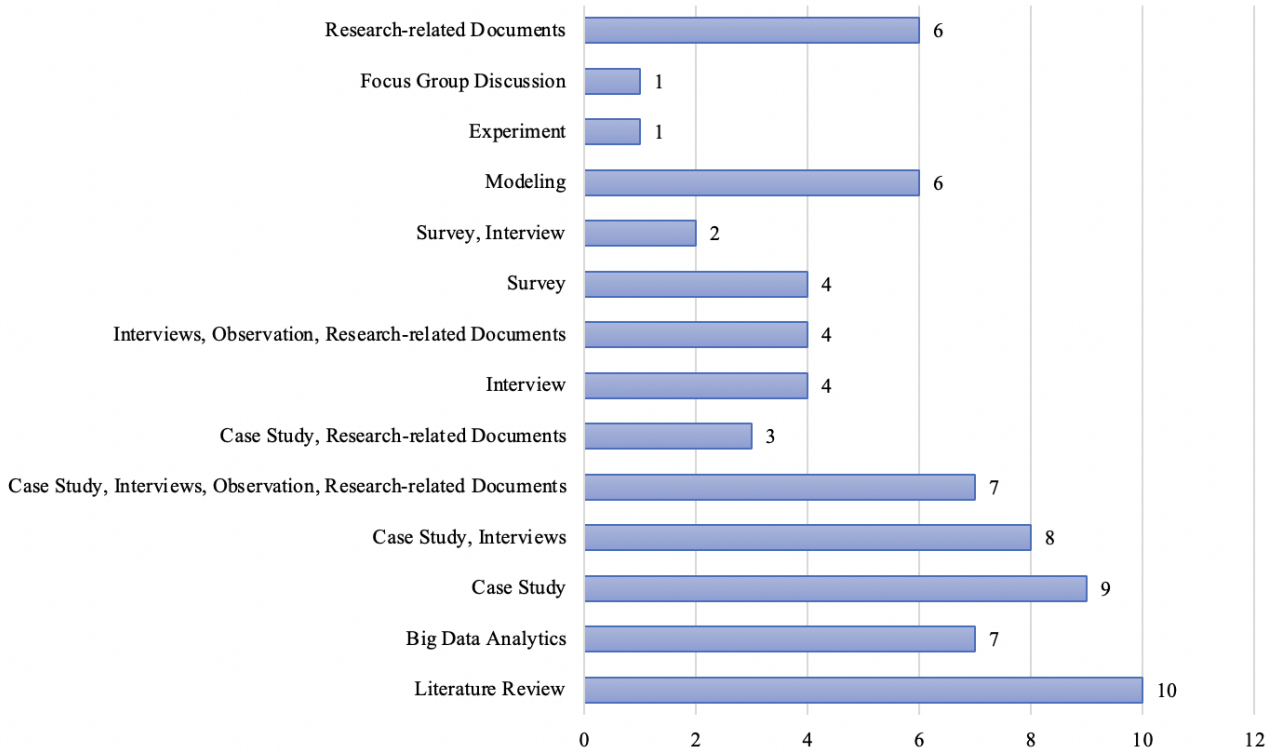

Figure 9. Data Sources of Selected Publications

3. Year of Publication

Figure 10 illustrates the annual publication trends for articles related to food sharing platforms from 2016 to 2024. During this period, a total of 78 articles were published, reflecting a notable increase in research interest and scholarly output, particularly after 2019. The data show a gradual rise in publications starting in 2016, with a significant acceleration observed between 2019 and 2020. This peak indicates a growing recognition of the importance of food sharing platforms in addressing FW and promoting social innovation. The dramatic increase in publications during this time likely reflects a combination of factors, including heightened global awareness of FW issues, the influence of the sharing economy, and the increasing viability of digital platforms as a strategic approach to sustainability.

The upward trend is punctuated by a peak in 2021, which may be attributed to the maturation of research frameworks and the integration of food sharing platforms within broader FW reduction strategies. This surge in scholarly attention highlights the critical role of such platforms in mitigating FW and fostering community-based solutions. Although there is a slight decline in the number of publications in 2022, the overall trajectory remains positive. The fluctuations observed in subsequent years might be influenced by the impact of the COVID-19

pandemic. Given the global emphasis on sustainable practices and reducing FW, it is likely that research in this area will continue to grow, contributing to the development and refinement of food sharing platforms.

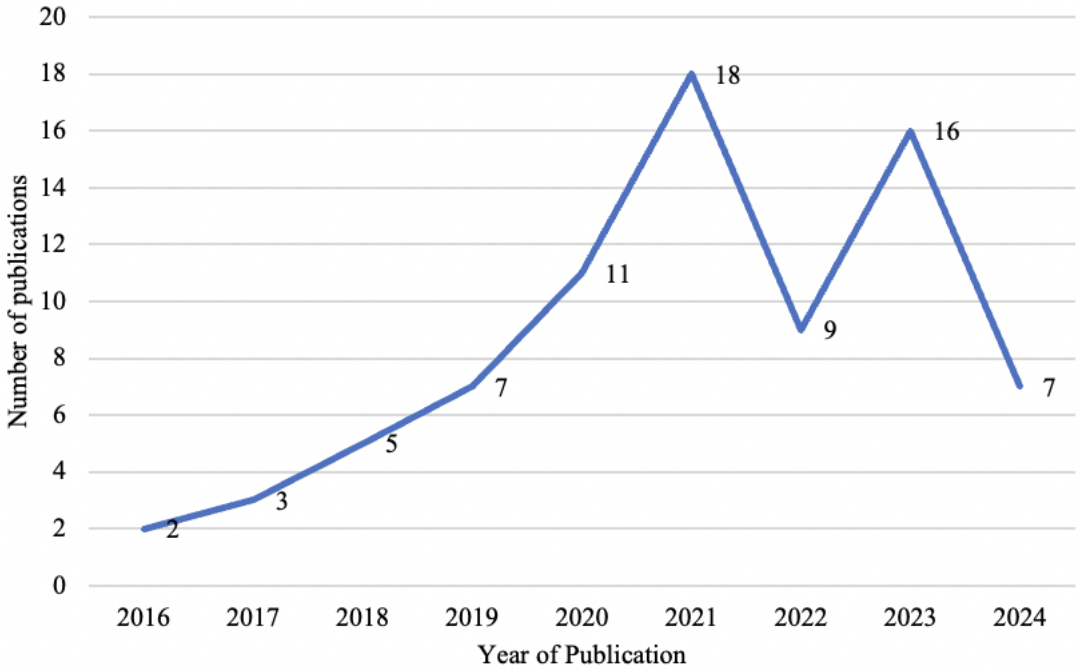

Figure 10. Publications per Year

4. Journals

The analysis of publication distribution across various journals reveals a broad dispersion, with articles appearing in 44 different journals. This indicates a wide interdisciplinary interest in the topic of food sharing platforms. Figure 11 illustrates that, rather than being concentrated in a few journals, research on food sharing platforms is spread across a diverse range of publications. The ten most frequently cited journals are listed below, reflecting a notable variety of focus areas, from sustainability and business to consumer services and industrial management. Prominent journals include *Sustainability*, *British Food Journal*, *Industrial Marketing Management*, and *Journal of Cleaner Production*. This diversity underscores the multifaceted nature of food sharing platforms, encompassing environmental, economic, and social dimensions.

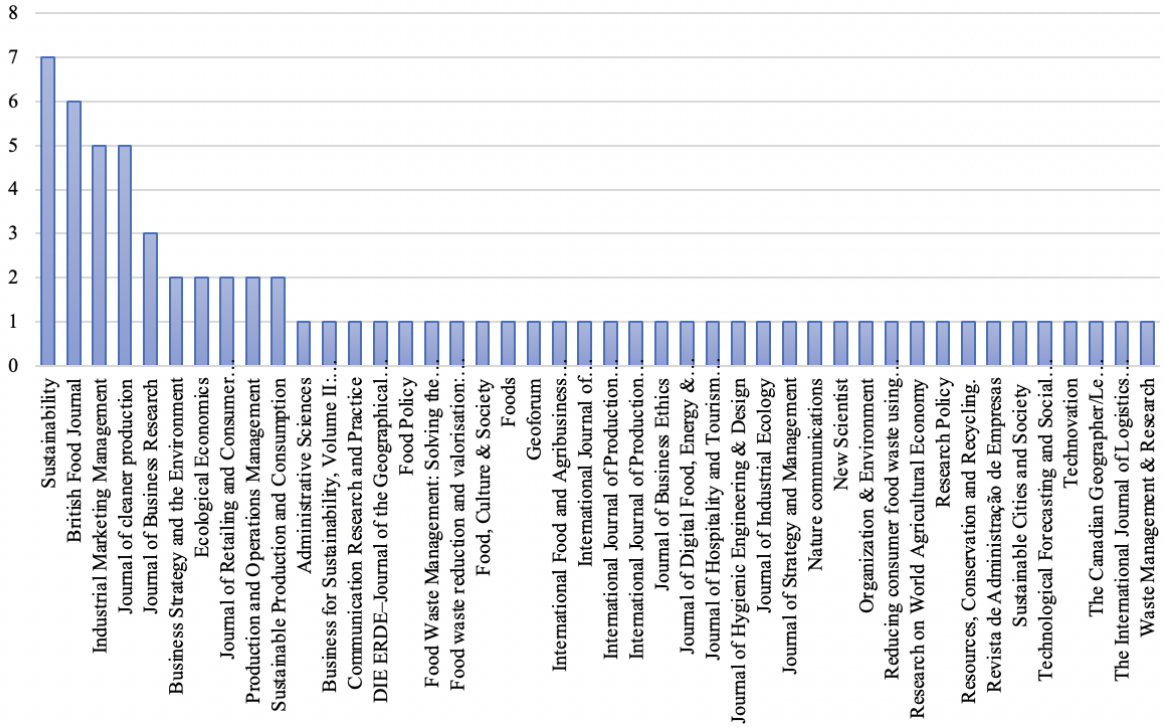

Figure 11. Frequency of Publications Across Various Journals

3.4.2 Conceptual Framework

The thematic analysis results reveal that various topics have been explored regarding business models and operational mechanisms, interconnectedness and multistakeholder collaboration, impact assessment of food sharing platforms, platform functions analysis, challenges facing food sharing platforms, essential factors for promoting sustainability in food sharing platforms, and user behaviour and platform acceptance. An overview of these findings, along with exemplary references, is presented in Table 6.

Table 6. Overview of the Findings and Exemplary References

Key Topics	Content	Papers
1. Business Models and Operational Mechanisms	• Evolution of digital platforms for food surplus redistribution • Meta-organisational orchestration mechanisms • Distinct mechanisms and interactional patterns • Systems of collaboration in food sharing platforms • Analytical supply chain model • Different supply chain structures • Model of a two-sided market • Circular economy strategies • Value choreography • Knowledge sharing mechanisms • Classification of different business models	Blackburn et al. (2023) Hellemans et al. (2020) Michelini et al. (2023) Choi et al. (2019) Principato et al. (2023) Richards and Hamilton (2018) Fassio and Minotti (2019) Weymes and Davies (2019) Sundgren (2020) Thornton (2024) Michelini et al. (2018) Hanson and Ahmadi (2021) Ciulli et al. (2020)
2. Interconnectedness and Multistakeholder Collaboration	• Participating stakeholders • New connections in food redistribution supply chain • Multistakeholder collaboration • Actor differentiation (community volunteers vs. regular users) • Analysis of volunteers' motives	Wirtz et al. (2019) Harvey et al. (2020) Lucas et al. (2021) Ruiner (2021)
3. Impact Assessment of Food Sharing Platforms	• Environmental, social, economic, and political impact • Mitigation of adverse impacts associated with food waste	Michelini et al. (2020) Sgroi et al. (2024) Cane and Parra (2020) Mattila et al. (2020) Makov et al., (2020)
4. Platform Functions Analysis	• Role of brokerage (connecting, informing, protecting, mobilising, integrating, measuring) • Digital platforms and applications as initiatives to reduce food waste	Ciulli et al. (2020) Kör et al. (2022)
5. Challenges Facing Food-Sharing Platforms	• Financial sustainability and moral issues	Harvey et al. (2020)

	• Defining true sharing amid commercial practices • Over-ordering and food waste • Limitations and barriers in impact measurement • Awareness and regulation issues • Multiple actor engagement with different values • Hierarchical power dynamics and legislative support • Resources, and Infrastructure • Dependence on Surplus Food • Users' Opportunistic Behaviour • Rebound Effect of Increased Demand • Supplier Knowledge and Redistribution Capacity • Consumer Trust and Engagement	Davies and Legg (2018) Michelini et al. (2020) Filimonau and Gherbin (2017) Weymes and Davies (2019) Karki et al. (2021) Hanson and Ahmadi (2021) Michelini et al. (2018) Samsioe and Fuentes (2022) Meshulam et al. (2023) Yamabe-Ledoux and Hori (2023)
6. Essential Factors for Promoting Sustainability in Food Sharing Platforms	• Value network and sustainable value proposition (economic, environmental, social dimensions) • Importance of knowledge-enhancing activities • Role of individual consumers in supply chain • Consumer activity vs. retail store activity • Focusing on values important to consumers	Mattila et al. (2020) Mazzucchelli et al. (2021) Ranjbari et al. (2024) Mullick et al. (2021) Heidenstrøm and Hebrok (2022)
7. User Behaviour and Platform Acceptance	• Critical Success Factors • Usage Intentions and Motivations • Continuance Intentions • Influencing Factors for Sharing Intentions • Perceptions and Infrastructure Impact • User Experience	Mazzucchelli et al. (2021) Hua et al. (2023) Magno and Cassia (2024) Yamabe-Ledoux and Hori (2023) Schanes and Stagl (2019) Kirmani et al. (2023) Mazzucchelli et al. (2021) NicaAvram et al. (2021) Haas et al. (2022)

1. Business Models and Operational Mechanisms

The literature on food-sharing platforms remains emergent, yet a growing research stream examines their innovative business models and operational mechanisms. This section synthesises key findings, focusing on platform definitions and classifications, operational structures, collaboration systems, the evolution of digital surplus food redistribution, and the supply chain models that sustain these platforms. By analysing these themes, this study highlights the complex dynamics shaping food-sharing initiatives and their transformative role in food distribution and sustainability. A deeper understanding of these interrelated aspects underscores the potential of food-sharing platforms to reshape the modern food system, enhancing efficiency, reducing waste, and fostering social and environmental benefits.

The Definition and Classify of Food Sharing Platforms

Food-sharing platforms aim to reduce food waste and promote sustainability by redistributing surplus food. While definitions vary, Hong et al. (2024) describe Food Waste Mobile Applications (FWMAs) as digital platforms that enable the sale of near-expiry food at discounted prices, facilitate donations between businesses and food banks, and provide expiry alerts to extend food usability. Scholars have classified food-sharing platforms based on business models, supply chain roles, and operational functions. Michelini et al. (2018) identified three key models: Sharing for Money, a for-profit B2C structure where businesses sell surplus food at reduced prices; Sharing for Charity, a B2B and C2B model focused on donations to non-profit organisations; and Sharing for Community, a C2C approach that enables local peer-to-peer food redistribution.

Additional classifications refine these distinctions. Hanson and Ahmadi (2021) differentiate between food redistribution platforms, which facilitate sale-to-purchase, peer-to-peer exchanges, and donations, and household food management platforms, which offer stock tracking, expiry alerts, and recipe suggestions. Ciulli et al. (2020) categorise platforms based on their supply chain position and revenue models, identifying B2B, B2C, B2NGO, and C2C models. Other scholars, including Apostolidis et al. (2021) and Harvey et al. (2020), introduce further distinctions such as peer-to-peer (P2P), business-to-charity (B2CH), and consumer-to-NGO (C2NGO), highlighting the platforms' diverse approaches to food waste reduction while balancing economic, social, and environmental objectives.

These classifications demonstrate how food-sharing platforms vary in their structures, missions, and operational mechanisms. While some prioritise commercial viability through surplus food sales, others emphasise social impact by focusing on donations and peer-based redistribution. Understanding these differences is essential for evaluating their effectiveness in addressing food waste and fostering a more sustainable food system.

Food Sharing Platforms Operational Mechanisms

Blackburn et al. (2023) conceptualise food-sharing platforms as Meta-Organisations, highlighting their role in orchestrating value creation within circular economy frameworks. They identify five key orchestration mechanisms that establish core functions, expand networks, and sustain platform identity. By enabling resource-centric matchmaking and integrating diverse actors, these mechanisms drive platform growth and reinforce circular business models. The study further emphasises the iterative nature of value creation, where cross-side network effects accumulate, enhancing platform scalability and sustainability.

In contrast, Hellemans et al. (2020) adopt a micro-level perspective, focusing on knowledge-sharing interactions within sustainability-oriented digital platforms (SODPs). Their qualitative analysis reveals how participant engagement and collaborative knowledge generation underpin platform success. By collectively framing sustainability challenges and mobilising resources, users enhance the platform's capacity to address food waste. The findings underscore the importance of bottom-up knowledge integration in complementing broader organisational strategies and reinforcing participatory governance.

Fassio and Minotti (2019) and Weymes and Davies (2019) provide additional insights into integrating circular economy strategies and ICT-mediated initiatives within urban food policies. Fassio and Minotti's (2019) study on RePoPP in Turin illustrates how circular economy indicators inform business and governance models, emphasising collaborative frameworks for systemic change. Weymes and Davies (2019) examine surplus food redistribution in San Francisco, demonstrating how ICT facilitates value coordination and optimises redistribution processes. While both studies highlight the transformative potential of digital interventions, they also point to challenges related to regulatory compliance and stakeholder engagement.

Collectively, these studies offer a comprehensive understanding of food-sharing platform operational mechanisms, illustrating the interplay between macro-level orchestration and

micro-level interactions. By delineating structural frameworks, knowledge-sharing patterns, and systemic dynamics, they provide critical insights for policymakers, practitioners, and researchers. These findings inform strategies for enhancing platform efficiency and sustainability within circular economy frameworks, reinforcing the necessity of integrating diverse perspectives to address the complex challenges of food redistribution.

Systems of Collaboration in Food Sharing Platforms

Michelini et al. (2023) examine the collaborative dynamics within food-sharing platforms, offering a comprehensive multiple case study analysis of 12 platforms. Their research identifies two distinct levels of collaboration: platform-level collaborations, which primarily address short-term social objectives such as reducing food waste and alleviating hunger while enhancing network effects, and business-level collaborations, which extend the platform's influence into areas such as consumer behaviour, social inclusion, and food policy, facilitating long-term scalability at national and global levels. Their study categorises five key types of collaboration, demonstrating how strategic partnerships evolve throughout the platform's life cycle, from the stand-up phase (initial establishment) through the startup phase (early growth) to the scale-up phase (expansion and maturity). Effective collaboration design and implementation are essential for aligning partnerships with both short- and long-term objectives, ensuring that stakeholder needs are met at each stage of development.

By adopting a structured, strategic approach to collaboration, food-sharing platforms can maximise their potential for sustainable growth and societal impact. This perspective underscores the importance of integrating adaptive, multi-level partnerships that evolve alongside platform maturity, reinforcing the role of collaboration in driving systemic change within food-sharing ecosystems.

Evolution of Digital Platforms for Food Surplus Redistribution

Principato et al. (2023) examine the evolution of digital platforms in food surplus redistribution, highlighting the transformation of multi-sided platform business models. Their longitudinal case study reveals how these platforms have progressed from basic matchmaking services to sophisticated systems integrating logistics, user feedback, and predictive analytics. Central to this shift is the adoption of advanced technologies such as machine learning and AI, enabling precise surplus food matching and enhancing scalability across diverse regional contexts. Digital innovation emerges as a critical driver of business model transformation, optimising

efficiency and sustainability for all stakeholders.

Similarly, Thornton (2024) explores the internationalisation of platform business models through a cross-border, cross-sector case study of six sharecoms. The findings illustrate how business models evolve in speed, scale, and scope, fostering virtuous cycles of expansion and network effects. By leveraging digital advancements, these platforms enhance operational efficiency while balancing economic viability with social and environmental sustainability.

Together, these studies underscore the dynamic evolution of food-sharing platforms, where technological innovation and internationalisation intersect to optimise redistribution processes. The findings highlight the crucial role of digital tools in driving scalability, efficiency, and sustainable impact within the food surplus redistribution ecosystem.

Supply Chain Model of Food Sharing Platforms

Choi et al. (2019) developed an analytical model to assess the value proposition of food-sharing platforms in facilitating Food Leftover Sharing (FLS). Their study highlights how decentralised supply chains benefit retailers, suppliers, consumers, and the environment, with economic viability closely tied to logistics costs. In centralised models, FLS platforms demonstrate environmental benefits, though economic impact varies based on logistical expenses. The study suggests government sponsorship as a strategy to mitigate high costs and enhance social welfare.

Richards and Hamilton (2018) examined secondary markets for "ugly produce," demonstrating how product variety stimulates demand among consumers and suppliers. Their findings highlight the importance of leveraging indirect network effects to enhance market efficiency and expand food redistribution efforts. Sundgren (2020) explored surplus food distribution structures, identifying triadic, tetradic, and linear chains. Triadic models, supported by mobile apps, enable decentralised, consumer-driven engagement, while tetradic models, based on online platforms, optimise centralised operations with limited product variety. Linear chains, driven by logistics services, facilitate large-scale surplus food recovery, underscoring the role of warehousing and transport in efficient distribution.

These studies collectively illustrate the complexities of food-sharing supply chains, balancing economic viability, environmental sustainability, and social impact. Choi et al. (2019)

emphasise the interplay between cost efficiency and environmental benefits, while Richards and Hamilton (2018) highlight product diversity as a key driver of market demand. Sundgren (2020) provides further insight into structural trade-offs, demonstrating how platform design affects efficiency and adaptability. Together, these findings underscore supply chain models as a cornerstone of food-sharing platforms, offering critical insights for stakeholders seeking to optimise distribution strategies in alignment with sustainability goals.

2. Interconnectedness and Multistakeholder Collaboration

In the investigation of food sharing platforms, scholarly inquiry examines the complex web of interconnectedness and collaborative dynamics among diverse stakeholders, elucidating their participatory roles, emergent connections, and the importance of multistakeholder collaboration. Scholars categorise participating stakeholders within food sharing platforms into four main groups: platform providers, service providers, customers, and complementors (Wirtz et al., 2019). Platform providers play a pivotal role in orchestrating value co-creation by overseeing platform governance and facilitating the intricate matching of supply and demand dynamics. Service providers contribute essential assets necessary for the production of goods and services, while customers actively engage with the services offered by the platform. Complementors, in turn, provide supplementary services that enhance and augment the core offerings of the platform. These stakeholders interact within the platform ecosystem to facilitate the seamless redistribution of surplus food items. Donors, which include producers, distributors, restaurants, and households, are integral to this ecosystem, posting details of surplus or leftover food on the platform. These surplus items are then either collected directly by recipients, such as non-profit organisations or consumers, or managed through volunteers tasked with distribution (Wirtz et al., 2019).

New Connections in Food Redistribution Supply Chain

The evolution of food redistribution supply chains, catalysed by the advent of food sharing platforms, fosters new connections among participants that differ from conventional modes of food donations. Harvey et al. (2020) examine prevailing reciprocity theories within sharing practices, revealing the emergence of genuine social bonds between platforms and users, which diverge from traditional linear supply chain paradigms. Through a detailed social network analysis of OLIO users, they identify a shift from reciprocity-based norms, with participants predominantly aligning as either donors or recipients, rather than occupying both roles simultaneously. This observation highlights a significant change in mindset, where food-

sharing participants increasingly view surplus food redistribution not merely as a social obligation but as a moral imperative to promote economic and environmental equity. The analysis of OLIO platform users indicates a prevailing tendency to adopt singular roles—either as donors or recipients—demonstrating a notable lack of dual role engagement within the network. This scholarly inquiry illuminates a fundamental reconfiguration of the dynamics underpinning food redistribution, emphasising the cultivation of authentic social connections and the evolving motivations driving participation in food sharing initiatives.

Actor Differentiation: Community Volunteers vs. Regular Users

Lucas et al. (2021) examine the role of volunteers in food-sharing platforms, highlighting their significant contributions to engagement and efficiency. Their study on OLIO, a peer-to-peer food-sharing app, shows that volunteers outperform regular users in user contact, item listings, and transaction success rates. Unlike traditional promotional methods, volunteer-driven interactions enhance platform sustainability, with social incentives such as altruism playing a stronger motivational role than financial rewards (Carpenter & Myers, 2010; Exley, 2018). Encouraging structured volunteer networks can therefore improve platform effectiveness in non-monetary and non-profit contexts.

Ruiner (2021) further explores volunteer motivations, revealing a dual framework of instrumental self-interest—such as obtaining food—and altruistic goals like waste reduction. Volunteers derive both tangible and intangible benefits, reinforcing the complex nature of their engagement. Their contributions extend beyond operational support, fostering social connections and enhancing platform legitimacy. These studies highlight the crucial role of multistakeholder collaboration in food-sharing platforms, illustrating how volunteers not only drive platform performance but also strengthen community ties and sustainability efforts. Understanding these dynamics can inform strategies to optimise volunteer engagement and enhance the long-term efficacy of food-sharing initiatives.

3. Impact Assessment of Food Sharing Platforms

The impact of food sharing platforms on promoting sustainable development has become a focal point in scholarly research, with numerous studies highlighting their role as catalysts for addressing food poverty, reducing food waste, fostering social inclusion, and enhancing community cohesion (Michelini et al., 2020; Sgroi et al., 2024; Cane and Parra, 2020; Mattila et al., 2020; Makov et al., 2020). These platforms provide various functions and features,

including free downloadable apps, low-cost food options, and access to surplus food information, all of which contribute to improved food security and enhance societal and environmental well-being.

Environmental, Social, Economic, and Political Impact

Food-sharing platforms play a crucial role in balancing food waste recovery and prevention while generating economic, environmental, and social benefits. Michelini et al. (2020) highlight their impact on improving supply chain efficiency, reducing surplus food, and addressing social inequalities. These platforms benefit businesses by lowering costs, enhancing profitability, and integrating sustainable practices into their operations. Environmentally, they promote resource efficiency and emissions reduction by optimising food redistribution and minimising waste. Socially, they empower consumers by fostering a sense of collective responsibility and social cohesion, raising awareness about food sustainability issues. Mattila et al. (2020) further emphasise their role in promoting equity by engaging diverse stakeholders, including businesses, consumers, and nonprofit organisations, to drive sustainable practices and encourage responsible consumption. Additionally, these platforms contribute to public policy discussions on food security, sustainability, and circular economy frameworks, positioning them as key actors in global sustainability efforts. Collectively, research underscores the transformative potential of food-sharing platforms in advancing sustainable development goals, demonstrating their capacity to integrate economic viability, environmental responsibility, and social inclusion within a scalable, technology-driven model.

Mitigation of Adverse Impacts Associated with Food Waste

Sgroi et al. (2024) examine food-sharing platforms' role in mitigating food waste, using TGTG as a case study. They highlight how these platforms enhance market efficiency by reducing information gaps, fostering negotiation, and addressing environmental externalities. While their study provides theoretical insights into market-based mitigation, it lacks empirical validation. Cane and Parra (2020) adopt a more applied perspective, emphasising digital platforms' role in optimising food distribution and reshaping consumption habits. Unlike Sgroi et al., their study provides tangible examples of how these platforms reduce food waste and environmental impact through enhanced supply chain management.

Makov et al. (2020) offer empirical evidence on the environmental benefits of peer-to-peer food-sharing apps. Their analysis demonstrates significant reductions in food waste and

emissions, showcasing the sharing economy's potential to enhance resource efficiency. Together, these studies present a comprehensive view of food-sharing platforms. Sgroi et al. establish a theoretical foundation, Cane and Parra offer practical applications, and Makov et al. provide empirical validation. Collectively, they underscore the role of digital platforms in addressing food waste while promoting economic, social, and environmental sustainability.

4. Platform Functions Analysis

Recent studies highlight the critical role of digital platforms in food waste recovery, emphasising their brokerage functions and transformative potential. Ciulli et al. (2020) explore how mobile applications address food waste by serving as intermediaries that connect waste generators with recipients. Their research identifies six key brokerage roles—connecting, informing, protecting, mobilising, integrating, and measuring—demonstrating how these platforms enhance circularity within the food supply chain and optimise waste recovery.

Kör et al. (2022) compare food waste reduction practices in India and the Netherlands, illustrating how digital technologies influence consumer behaviour and supply chain efficiency. Their findings reveal that digital platforms facilitate surplus food redistribution through enhanced awareness, discount incentives, and meal planning tools. Notably, Dutch consumers exhibit a strong preference for purchasing discounted near-expiry food, underscoring the role of financial incentives in promoting waste reduction.

These studies collectively underscore the transformative impact of digital platforms in mitigating food waste. By functioning as brokers that facilitate connections and foster sharing economies, these technologies contribute to sustainable food management by enhancing consumer participation, promoting resource efficiency, and integrating digital solutions into the circular economy framework.

5. Challenges Facing Food-Sharing Platforms

The expansion of food-sharing platforms underscores both their potential and the challenges they encounter in achieving long-term sustainability. While many initiatives have emerged, numerous failures highlight the complexities these platforms must navigate. Sustainable success requires not only financial viability but also effective marketing, technological optimisation, and service enhancement to address operational inefficiencies and sustain user engagement (Fuentes et al., 2021).

The adoption and longevity of food-sharing platforms are shaped by multifaceted challenges, particularly those related to user participation, including suppliers, consumers, and broader stakeholders. Defining the nature of sharing within commercial contexts further complicates their positioning, raising questions about financial sustainability, ethical considerations, and the rebound effect of increased demand. Additionally, resource constraints, infrastructure limitations, regulatory barriers, and the challenge of measuring impact pose significant hurdles. Overcoming these obstacles requires a holistic approach that integrates economic, social, and technological strategies to ensure the continued success of food-sharing initiatives.

Defining True Sharing Amid Commercial Practices

A key challenge in food-sharing literature is the lack of a universally accepted definition of sharing, particularly in commercial contexts. Davies and Legg (2018) examine urban food sharing mediated by ICT, highlighting tensions in framing monetary transactions and profit-seeking activities as sharing. The legitimacy of such exchanges remains contested, with concerns about their alignment with traditional sharing values (Davies, Gray et al., 2017).

Davies et al. (2017) argue that commercial enterprises often appropriate sharing terminology as a marketing strategy, leveraging its normative associations with care and community to enhance consumer appeal. Belk (2014) reinforces this critique, contending that categorising profit-driven exchanges as sharing undermines the core altruistic principles of genuine sharing economies. The definitional ambiguity surrounding sharing complicates the evaluation of food-sharing initiatives and their sustainability claims. While Davies and Legg (2018) acknowledge the potential benefits of food sharing, the absence of a clear conceptual boundary challenges rigorous assessment. Belk (2014) warns that the misuse of sharing rhetoric by commercial actors distorts public perception and threatens the authenticity of true sharing practices.

Financial Sustainability and Moral Issues

Achieving sustainable development in food-sharing platforms requires addressing financial sustainability and moral dilemmas. Harvey et al. (2020) highlight the tension between altruistic intentions and long-term viability, noting that while some platforms aim to provide free access, they must also cover operational costs, raising ethical concerns about sustainability.

Fuentes et al. (2021) argue that economic sustainability, technological optimisation, and

efficient service delivery are essential for maintaining consumer trust and engagement. Without a solid financial foundation, platforms struggle to sustain operations and fulfil their objectives. Similarly, Yamabe-Ledoux and Hori (2023) identify financial viability as a key barrier to expanding food-sharing practices, emphasising the need for sustainable revenue models. The literature consistently underscores financial sustainability as a fundamental challenge for food-sharing platforms, closely tied to ethical considerations. Addressing these issues requires integrating economic, technological, and operational efficiencies to support their long-term impact.

Rebound Effect of Increased Demand

Digital sharing platforms offer cost savings and convenience but also contribute to increased demand, potentially offsetting anticipated environmental benefits through the rebound effect. This challenge is particularly relevant to food-sharing platforms, where increased accessibility can lead to greater consumption rather than waste reduction.

Meshulam et al. (2023) analyse the rebound effect using data from over 750,000 food exchanges in the UK. Through econometric modelling, geospatial network analysis, and environmentally extended input-output analysis, they find that rebound effects can negate between 20% and 94% of expected environmental benefits, depending on the spending scenario. Their study highlights the need to account for rebound effects in environmental assessments of digital sharing platforms.

Similarly, Sharma et al. (2021) demonstrate how retailer promotions intended to boost sales often lead to unintended food waste. Promotions encourage consumers to over-purchase food, mirroring the rebound effect seen in digital sharing platforms, where perceived savings drive increased consumption, diminishing environmental gains. While digital sharing platforms and promotional sales strategies aim to enhance efficiency and reduce waste, they also stimulate additional demand. This rebound effect raises concerns about whether sharing economies can fully deliver on their environmental promises, necessitating more comprehensive assessments of their long-term sustainability impacts.

Resources and Infrastructure

Barriers to effective food redistribution span multiple dimensions, involving consumers, suppliers, platform firms, technology, and regulatory frameworks. Key challenges include

consumer awareness, supplier engagement, company culture, technological acceptance, and regulatory support, all of which hinder the efficiency of food-sharing initiatives.

Hanson and Ahmadi (2021) argue that over-reliance on mobile applications places excessive responsibility on users while failing to address systemic issues of food waste and inequitable distribution. They call for a broader strategy incorporating governmental, industrial, and individual interventions. In contexts such as Canada, disparities in awareness, resources, and infrastructure further limit mobile applications' effectiveness. Barriers such as restricted access to mobile devices, concerns over privacy, and inadequate telecommunications infrastructure necessitate investment in affordable technology and robust security measures.

Surplus food redistribution platforms also face sustainability challenges within food supply chains (Yamabe-Ledoux & Hori, 2023). Expanding supplier networks is crucial for better matching supply with demand, yet suppliers often lack the knowledge and capacity for redistribution. High staff turnover and resource limitations further hinder surplus food management, leading to disposal rather than redistribution.

Addressing these challenges requires a holistic approach that goes beyond technological solutions. Effective strategies must consider the diverse needs of stakeholders while tackling systemic inefficiencies in food supply chains and regulatory frameworks to ensure the long-term viability of food-sharing platforms.

Regulation and Measurement Issues

Regulation and measurement pose significant challenges to the evaluation and implementation of sustainability initiatives in food-sharing platforms. Michelini et al. (2020) highlight that the inability to effectively measure sustainability impacts raises concerns about these platforms' contributions to sustainable development goals. Key barriers include insufficient technological infrastructure and data management capabilities to track food reduction along supply chains, alongside the absence of mandatory food waste reporting policies. Additionally, firms struggle to balance long-term digital investments with short-term profitability pressures.

Yamabe-Ledoux and Hori (2023) further emphasise regulatory and policy constraints that limit the adoption of food waste prevention practices, restricting the broader sustainability impact of food-sharing platforms. These challenges are not unique to food-sharing but reflect broader

difficulties faced by sustainability-driven business models.

Despite these limitations, regulatory reforms and gradual business model adaptations offer opportunities to enhance food-sharing platforms' viability. Addressing policy gaps and fostering a supportive regulatory environment can help stakeholders better align with sustainability goals and strengthen the long-term impact of food-sharing initiatives.

User-Related Challenges

User engagement is central to food-sharing platforms, yet opportunistic behaviours pose significant challenges. Michelini et al. (2018) highlight that some donors exploit platforms to offload substandard goods, while opportunistic consumers delay purchases, awaiting discounts. This dual dynamic affects the reliability of food-sharing initiatives, creating tensions between economic incentives and social responsibilities. While such platforms provide businesses with secondary markets for near-expiry goods, they can also divert resources away from food banks and social supermarkets, undermining their social missions. Effective governance and ethical guidelines are essential to maintaining the balance between profit motives and sustainability goals.

Supplier Challenges

Food-sharing platforms face significant hurdles in supplier engagement. Yamabe-Ledoux and Hori (2023) highlight that supplier-side challenges stem from limited awareness, knowledge gaps, and operational constraints. High staff turnover and resource limitations further hinder surplus food redistribution. Opportunistic behaviours, such as using platforms to discard undesirable products, compromise the quality of shared food resources (Michelini et al., 2018). Filimonau and Gherbin (2017) examine UK supermarkets' attitudes toward food waste reduction, revealing that while businesses acknowledge the issue, regulatory barriers, rigid corporate policies, and limited control over suppliers impede proactive engagement. A more unified regulatory framework and targeted supplier education are critical for enhancing participation in food-sharing initiatives.

Consumer Challenges

Consumer hesitation toward food-sharing platforms often stems from concerns about food safety, quality, and convenience. Yamabe-Ledoux and Hori (2023) note that many consumers perceive surplus food as substandard, limiting engagement. The behavioural shifts required to

integrate food-sharing into daily routines further deter participation. Samsioe and Fuentes (2022) explore how digital platforms influence shopping habits, finding that while they can establish new consumption patterns, these changes are often unstable. Sustainable adoption depends on aligning new practices with household routines and reducing perceived inconveniences (Fuentes & Samsioe, 2020; Fuentes et al., 2021).

Multiple Actor Engagement

The effectiveness of food-sharing platforms depends on coordinated efforts among diverse actors with varying priorities. Weymes and Davies (2019) highlight the challenge of aligning stakeholders who operate under different frameworks of justification (Boltanski & Thévenot, 2006). Karki et al. (2021) explore hierarchical power dynamics in surplus food redistribution, showing that donors often exert greater influence than third-sector organisations. This imbalance creates barriers to effective collaboration, mirroring findings by Alexander and Smaje (2008) and Baglioni et al. (2017), who highlight the privileged role of certain third-sector entities while others remain marginalised. Addressing these power asymmetries is essential for fostering equitable redistribution networks and maximising the social impact of food-sharing initiatives.

6. Essential Factors for Promoting Sustainability in Food Sharing Platforms

The sustainability of food-sharing platforms (FSPs) depends on several crucial factors, including value networks, sustainable value propositions, knowledge-enhancing activities, and the role of consumers within the supply chain. The literature offers extensive exploration of these dimensions, providing insights into the mechanisms and strategies that can improve the effectiveness and sustainability of these platforms.

Value Network and Sustainable Value Proposition

Mattila et al. (2020) emphasise the importance of value networks and sustainable value propositions in platform-based food waste reduction businesses. Their study identifies three key networks—user, producer, and support networks—as essential for value creation. The user network, comprising food service personnel and consumers, is pivotal in ensuring engagement and sustainability outcomes. The producer network consists of internal teams managing technical development, sales, and platform operations, while the support network includes stakeholders providing essential resources.

The study underscores the user network's critical role in capturing value, as active participation directly impacts platform sustainability. Mattila et al. further categorise the sustainable value proposition into economic, environmental, and social dimensions, advocating for a balanced approach to enhance food-sharing platform (FSP) viability. This aligns with broader sustainability frameworks, such as Elkington's (1997) triple bottom line, which integrates economic profitability, environmental stewardship, and social equity.

For long-term success, FSPs must not only reduce food waste but also generate economic savings, lower environmental impact, and improve food security. Mattila et al.'s findings highlight that addressing all three dimensions strengthens platform resilience and ensures sustainability in the food-sharing ecosystem.

Importance of Knowledge-Enhancing Activities

Ranjbari et al. (2024) highlight the pivotal role of knowledge-enhancing activities in improving food-sharing platforms (FSPs). Using a System Dynamics simulation model, they analyse the Too Good To Go (TGTG) platform in Italy, finding that while user adoption is strong, the platform's impact on food waste reduction could be significantly improved through targeted educational initiatives. Although TGTG's marketing is effective, greater public awareness of food waste's environmental, economic, and social consequences could drive higher participation and more efficient app usage, increasing the volume of food saved.

Mattila et al. (2020) complement this perspective by emphasising the user network's role within FSP value structures. While they focus on structural elements, Ranjbari et al. underscore the importance of dynamic user education and engagement. Together, these studies suggest that a combination of strong value networks and active knowledge dissemination is crucial for enhancing the sustainability and effectiveness of FSPs.

Role of Individual Consumers in the Supply Chain

Consumers are central to the supply chain of food-sharing platforms, actively shaping their success and sustainability. Mattila et al. (2020) and Ranjbari et al. (2024) highlight that consumer engagement directly influences food-sharing platforms' ability to reduce waste and enhance sustainability. Rather than passive users, consumers drive supply chain dynamics through their behaviours and participation levels.

Heidenstrøm and Hebrok (2022) further examine consumer intentions and the challenges of adopting food-sharing practices. Their study on Norwegian families using meal box schemes and online grocery shopping demonstrates that while such schemes hold sustainability potential, they require significant behavioural adaptations. This underscores the need for user-friendly platforms that integrate seamlessly into consumers' lifestyles, ensuring a smoother transition to sustainable food practices.

Consumer Activity vs. Retail Store Activity

The comparative roles of consumers and retail stores are crucial in food-sharing platforms. While retail stores provide surplus food, the sustainability of these platforms relies heavily on consumer engagement. Mattila et al. (2020) emphasise the critical role of user networks, positioning consumers as active participants in value creation, whereas retail stores primarily serve as suppliers. This distinction underscores the need for strategies that enhance consumer involvement to sustain food-sharing initiatives.

Ranjbari et al. (2024) reinforce this notion by demonstrating that platforms like TGTG depend not only on surplus food availability but also on informed consumer participation. Their simulation results highlight that increasing consumer knowledge and engagement significantly enhances food waste reduction, suggesting that education and awareness campaigns may be more effective in achieving sustainability goals than focusing solely on supply-side interventions.

Mullick et al. (2021) further explore the dynamic interaction between consumers and retailers in food-sharing platforms. Their findings reveal that consumer-driven demand for discounted near-expiry items has a stronger and more enduring effect than retailer-driven discount offerings. This imbalance suggests that incentivising retailers to actively engage in food-sharing platforms can enhance participation and overall efficiency.

Ultimately, the sustainability of food-sharing platforms is shaped by robust value networks, sustainable value propositions, and active consumer engagement. Mattila et al. (2020) identify users as central to value creation, highlighting their role as both beneficiaries and contributors. Consumers influence platform outcomes through engagement, advocacy, and behavioural choices, directly impacting food waste reduction and sustainability. Their participation expands platform reach, strengthens community ties, and ensures that services align with diverse user

needs. Actively involving consumers in decision-making and integrating their feedback can enhance satisfaction, loyalty, and long-term platform viability.

3.4.3 User Behaviour Towards Technology Adoption

The sustainable development of food-sharing platforms (FSPs) is inherently dependent on user engagement, as active participation and peer influence are crucial in shaping platform success and longevity. Users function as both contributors and beneficiaries, influencing the volume and quality of shared food resources, shaping platform dynamics, and fostering network effects essential for growth. Consequently, understanding the motivations, behaviours, and decision-making processes of individual users is central to optimizing the effectiveness and resilience of FSPs.

Recognizing the critical role of user engagement, a growing body of research has sought to examine users' behaviours, acceptance, intentions, and attitudes towards food-sharing platforms. Existing studies explore a variety of perspectives, including psychological, technological, and socio-economic factors that drive participation in FSPs. This section synthesizes key contributions from the literature, offering a comprehensive overview of the determinants of user interaction with FSPs and their implications for platform sustainability. A nuanced understanding of user behaviour not only informs platform design and policy interventions but also facilitates the development of strategies to enhance long-term adoption and commitment.

Environmental Concern

Environmental awareness and sustainability concerns have been widely acknowledged as significant drivers of user engagement with FSPs. Hua et al. (2023) conducted a comprehensive analysis of environmental concern and awareness of food waste as influential factors in the adoption of FSPs in Thailand. Their structural equation modelling (SEM) results identified environmental concern as one of the strongest predictors of consumers' purchase intentions regarding food surplus, indicating that sustainability-conscious individuals are more likely to adopt food-sharing behaviours. Similarly, Mazzucchelli et al. (2021) emphasized the importance of awareness of environmental and social responsibility, demonstrating that users who perceive food-sharing as a means to contribute to environmental and social well-being are more likely to engage. These findings align with broader literature highlighting the role of pro-environmental values in shaping sustainable consumption patterns.

However, despite the consensus on the significance of environmental motivations, studies have noted variability in their relative importance across different user groups and geographic contexts. While Hua et al. (2023) and Kirmani et al. (2023) underscore environmental concern as a key motivator, Yamabe-Ledoux and Hori (2023) found that economic motivations often outweigh environmental considerations, particularly in regions where financial constraints are more pronounced. This discrepancy suggests that while sustainability messaging is effective for certain demographics, platform designers must also integrate complementary incentives to appeal to a broader audience. Moreover, a key limitation in existing research is the short-term focus on initial adoption rather than sustained engagement. While users may be initially drawn to FSPs due to environmental values, long-term participation likely depends on other reinforcing factors, such as economic benefits, ease of use, and social dynamics.

Perceived Playfulness

Perceived playfulness—defined as the enjoyment, entertainment, and intrinsic pleasure derived from engaging with a platform—has emerged as a key determinant of user engagement in digital consumption environments. While traditional adoption models prioritise utility and ease of use, recent research highlights hedonic motivations as crucial for fostering sustained participation.

Hua et al. (2023) identified perceived playfulness as the strongest predictor of purchase intentions in food-sharing contexts, demonstrating that users who find the platform enjoyable and interactive are more likely to engage actively and return regularly. This underscores the importance of deliberate platform design that integrates elements such as gamification, dynamic user interfaces, and social connectivity to sustain engagement. Haas et al. (2022) further support this view, showing that both hedonic (pleasurable) and functional (practical) design elements enhance perceived platform quality and long-term participation.

For FSPs, incorporating reward-based incentives, interactive challenges, and community-driven features can significantly improve user engagement. Social integration mechanisms, such as peer recognition and shared achievements, further reinforce playfulness by leveraging social validation and communal interaction. Additionally, research suggests that playful experiences strengthen platform loyalty, encouraging users to remain active and promote the platform through word-of-mouth (Hamari et al., 2014).

Ease of Use

The ease of use of a food-sharing platform is a critical determinant of user adoption, as users are more likely to engage with digital services that offer a seamless and intuitive experience. Platforms that minimise cognitive effort, streamline interactions, and provide efficient navigation enhance the likelihood of sustained participation. Magno and Cassia (2024) integrated the Technology Acceptance Model (TAM) and self-determination theory to examine user continuance intentions in food-sharing platforms (FSPs). Their findings emphasise perceived ease of use as a fundamental factor influencing ongoing engagement, reinforcing the idea that users prefer platforms that require minimal effort to operate while still delivering high functionality.

This aligns with broader research on digital adoption, which consistently highlights usability as a major determinant of technology acceptance. A complex or unintuitive interface can create friction in user interactions, deterring participation and reducing long-term commitment. Beyond technical usability, effective user guidance plays a crucial role in shaping perceptions of ease of use. Platforms that offer step-by-step instructions, interactive tutorials, and responsive customer support are more likely to foster a positive user experience and long-term engagement. Moreover, mobile accessibility and cross-platform integration further enhance usability, catering to the increasing reliance on smartphones for digital interactions.

Economic Factors

Unlike environmentally driven users, many individuals engage with food-sharing platforms (FSPs) primarily to reduce personal expenses, making financial considerations a crucial determinant of both adoption and long-term participation. Hua et al. (2023) identified price sensitivity as a key factor influencing users' willingness to adopt FSPs, demonstrating that individuals are more likely to engage with these platforms when they provide tangible financial benefits. Similarly, Yamabe-Ledoux and Hori (2023) found that price consciousness was one of the primary motivations for using FSPs in Japan, suggesting that for many users, economic incentives outweigh sustainability concerns in decision-making.

The role of financial benefits extends beyond initial adoption to influence continued engagement and retention. Magno and Cassia (2024) emphasised that economic incentives are fundamental for sustaining user participation, particularly among individuals who rely on FSPs

for regular access to low-cost or surplus food. Their findings suggest that platforms that effectively highlight and optimise their economic advantages—such as providing free or significantly discounted food options—are more likely to attract and retain users. This underscores the importance of designing business models that integrate financial incentives to appeal to a broader audience.

To enhance economic appeal, platform operators should consider strategic mechanisms that reinforce user engagement. Discount structures, reward systems, and cost-sharing models can incentivise continued participation, ensuring that users perceive ongoing economic value in their interactions with the platform. Furthermore, platform accessibility in lower-income communities can significantly increase user engagement by addressing food insecurity concerns while simultaneously reducing food waste. The challenge for FSPs is to balance financial sustainability with inclusivity, ensuring that economic incentives are attractive to users while maintaining long-term platform viability.

Convenience Orientation

While economic and environmental motivations play significant roles, the ability to seamlessly integrate food-sharing activities into daily routines is equally important. Yamabe-Ledoux and Hori (2023) found that beyond price consciousness, ease of access and logistical convenience were key determinants of FSP adoption in Japan. Their study suggests that users are more likely to engage with food-sharing platforms when the process of donating, receiving, or exchanging food is effortless, efficient, and minimally disruptive to their schedules.

Convenience-driven engagement highlights the need for operational efficiency in platform design. Users may be deterred by logistical challenges such as inconvenient pickup locations, unclear coordination processes, or lengthy transaction times, which introduce friction into the sharing process. Ensuring that FSPs function smoothly requires minimising these barriers by enhancing platform usability and streamlining key operational aspects. Optimising pick-up and drop-off points, ensuring real-time availability updates, and offering flexible collection or delivery options can significantly improve the user experience.

Technological enhancements can further reinforce convenience-oriented engagement. Features such as automated real-time notifications, efficient food-matching algorithms, and streamlined in-app communication channels can simplify the coordination process between donors and

recipients, reducing uncertainty and enhancing accessibility. Additionally, integration with mapping services or route optimisation tools can facilitate easier navigation to collection points, addressing a key barrier for many users. Ultimately, the degree to which an FSP aligns with users' existing routines determines its long-term success.

Social Influence and Community Support

Social dynamics play a fundamental role in shaping food-sharing behaviours, as individuals are often influenced by the attitudes and actions of those within their social networks. Hua et al. (2023) identified social norms as a significant determinant of food-sharing platform (FSP) adoption, suggesting that individuals are more likely to participate when they perceive that their peers, family members, or broader communities engage in similar behaviours. This highlights the importance of perceived social validation in encouraging participation, as users may feel a stronger inclination to join an FSP if they believe it aligns with the expectations and practices of those around them.

Beyond general social norms, deeper psychosocial mechanisms, such as identity formation and peer reinforcement, further shape user engagement. Schanes and Stagl (2019) conducted in-depth interviews with Austrian users of digital food-sharing platforms and identified social influence as one of five primary drivers of participation. Their findings suggest that users are motivated not only by environmental or economic benefits but also by a desire for social connection and communal belonging. Mazzucchelli et al. (2021) further reinforced the significance of social influence in driving platform success, demonstrating that it operates in conjunction with awareness of environmental and social responsibility. Their study found that users who perceive food-sharing as a socially endorsed and morally commendable activity are more likely to engage and remain active participants. This underscores the potential of leveraging social networks, peer advocacy, and word-of-mouth promotion as strategic tools to enhance platform adoption.

Perceived Quality

Perceived quality is a critical determinant of user engagement and long-term participation in food-sharing platforms (FSPs), as it shapes users' trust, satisfaction, and willingness to continue using the platform. A positive perception of quality extends beyond basic functionality to encompass both practical efficiency and user experience, influencing the extent to which individuals integrate food-sharing activities into their routines. Haas et al. (2022) examined

MySusCof, an app designed to reduce food waste, and found that gamification elements, hedonic features, and practical functionalities significantly influenced perceived quality and user satisfaction. Their study highlights that perceived quality is not solely based on technical performance or ease of use but also on the extent to which a platform fosters enjoyable and meaningful interactions. This aligns with broader research on digital engagement, which suggests that users are more likely to return to platforms that provide a well-rounded experience, combining efficiency with elements of enjoyment and interactivity.

Research Gaps and Conflicting Findings

Despite the growing body of research on food-sharing platforms (FSPs), several gaps and inconsistencies persist, limiting a comprehensive understanding of user engagement and retention. One of the most prominent theoretical and empirical discrepancies concerns the relative importance of environmental versus economic motivations. While some studies (e.g., Hua et al., 2023; Kirmani et al., 2023) highlight environmental concern as a primary driver of FSP participation, others (e.g., Yamabe-Ledoux & Hori, 2023) argue that economic incentives, such as price sensitivity and financial savings, play a more dominant role. This divergence suggests that user motivations are highly context-dependent, influenced by factors such as regional economic conditions, cultural attitudes toward sustainability, and individual socio-economic status.

Another critical research gap is the lack of focus on continued use and long-term engagement. Much of the existing literature prioritises initial adoption and short-term participation, with relatively little attention paid to the factors that sustain user engagement over time. Magno and Cassia (2024) attempted to address this issue by integrating the Technology Acceptance Model (TAM) and self-determination theory, identifying perceived ease of use, economic incentives, and environmental motivations as key determinants of ongoing participation. However, their findings remain preliminary, highlighting the need for more comprehensive behavioural models that account for habit formation, changing user expectations, and platform design adaptations.

Beyond these issues, there is also limited research on the role of digital trust, perceived food safety, and platform governance in shaping sustained participation. While usability and playfulness influence adoption, trust-related concerns—such as food quality assurance, liability issues, and transparency in food sourcing—may act as barriers to retention. In

conclusion, while substantial progress has been made in understanding user motivations and engagement, addressing these research gaps is crucial for ensuring the sustainable development, scalability, and long-term success of food-sharing platforms

3.5 Theoretical Foundations

A strong theoretical foundation is essential for understanding the adoption, engagement, and continued usage of food-sharing platforms. This study integrates established theories from information systems, behavioural science, and service marketing to construct a comprehensive framework for analysing user behaviour. The following sections provide an overview of key theories underpinning this research, illustrating how they interconnect to explain consumer decision-making in digital food-sharing platforms.

3.5.1Technology Acceptance Theories

The adoption of technology have been extensively studied within the field of Information Systems (IS), resulting in a range of theoretical models that explain user behaviour. Grounded in social psychology, the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) and its extension, the Theory of Planned Behaviour (TPB) (Ajzen, 1991), assert that behavioural intentions are influenced by individual attitudes, subjective norms, and perceived behavioural control. These models have laid the foundation for understanding decision-making processes in technology adoption.

The Technology Acceptance Model (TAM) (Davis, 1989) builds upon these theories by introducing perceived usefulness and perceived ease of use as primary determinants of technology adoption. Subsequent refinements, such as the Decomposed Theory of Planned Behaviour (DTPB) (Taylor and Todd, 1995) and the Innovation Diffusion Theory (IDT) (Rogers, 1995), further integrate external influences, including social norms, perceived risk, and facilitating conditions. These models have informed research across various technological domains, yet their applicability varies depending on context and technology type.

To consolidate these fragmented perspectives, Venkatesh et al. (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT), which synthesises key determinants from eight major models, enhancing predictive accuracy in explaining user adoption

behaviours. UTAUT has been extensively applied in IS research to examine factors influencing the adoption of emerging technologies, including digital platforms and e-commerce systems (Williams et al., 2009).

3.5.2 Unified Theory of Acceptance and Use of Technology (UTAUT2)

Recognising the limitations of UTAUT in capturing consumer-driven adoption behaviours, Venkatesh et al. (2012) introduced UTAUT2, incorporating hedonic motivation, price value, and habit as additional predictors of technology use. This expansion significantly improved the model's explanatory power, particularly in non-organisational contexts where personal motivations and economic considerations influence user decisions. UTAUT2 has since been adapted to various digital environments, including sustainability-driven platforms and mobile applications (Moltene and Orsato, 2021; Kirmani et al., 2023).

By accounting for individual decision-making autonomy, UTAUT2 extends the original framework beyond professional environments, making it particularly relevant for consumer-based digital services. Hedonic motivation captures the role of intrinsic enjoyment in technology engagement, price value reflects users' evaluation of cost-benefit trade-offs, and habit explains how repeated interactions shape future technology usage. These additions strengthen the model's applicability to commercial and voluntary technology adoption, as seen in studies exploring consumer adoption of mobile commerce, smart technologies, and digital sharing platforms (Williams et al., 2015).

In the context of food-sharing platforms, prior studies emphasise the need to extend UTAUT2 by integrating domain-specific factors such as trust, food safety concerns, and perceived social impact (Ciulli et al., 2020). Given the nature of food redistribution, concerns regarding hygiene and risk perceptions become critical determinants of continued engagement. This study builds upon these insights by incorporating emotional and risk-related constructs, acknowledging that psychological factors—such as stigma, trust, and perceived safety—significantly influence the adoption and continued use of food-sharing technologies.

3.5.3 Perceived Value and Perceived Risk

Perceived Value and Perceived Risk are interrelated constructs that significantly shape consumer decision-making, particularly in digital service ecosystems such as food-sharing

platforms. While perceived value reflects the user's overall assessment of the benefits gained relative to the costs and sacrifices made (Zeithaml, 1988), perceived risk captures the potential negative consequences that may deter engagement (Bauer, 1967). The balance between these two constructs determines whether consumers adopt and continue using a digital platform.

Perceived value has evolved as a multidimensional concept in service marketing, encompassing economic, functional, psychological, and social dimensions (Holbrook, 1999; Kotler, 2003). It has been widely studied within digital commerce, where researchers highlight the importance of utilitarian value (benefit-cost trade-offs) and hedonic value (emotional and experiential aspects) (Bernoulli, 1967; Sweeney and Soutar, 2001). Zeithaml's (1998) goal-oriented model suggests that higher perceived value enhances consumer satisfaction and behavioural intentions, particularly in contexts where service quality and consumer trust play a vital role.

Conversely, perceived risk describes the uncertainties and possible negative outcomes associated with using a product or service (Jacoby and Kaplan, 1972; Martins et al., 2014). It consists of various dimensions, including financial risk (monetary loss), privacy risk (data security concerns), physical risk (safety issues), and performance risk (unmet expectations). In the context of food-sharing platforms, additional concerns such as food safety, trust in contributors, and social acceptance influence user engagement (Ciulli et al., 2020). Research suggests that when perceived risk outweighs perceived value, users are less likely to engage with or continue using a platform (Chung and Koo, 2015).

The dynamic interplay between these constructs determines long-term user retention. Studies show that enhancing perceived value—through transparent pricing, incentives, convenience, and ethical considerations—can mitigate perceived risk and improve user engagement (Kim et al., 2007; Sweeney and Soutar, 2001). Conversely, platforms that fail to address risk concerns through trust-building mechanisms, safety assurances, and robust verification systems risk losing consumer confidence (Featherman and Pavlou, 2003).

3.5.4 Continuous Usage Research

The Expectation Confirmation Model (ECM) has become a foundational framework for understanding post-adoption behaviour in Information Systems (IS). Originating from the Expectation-Confirmation Theory (ECT), ECM explains that user satisfaction is influenced by

the alignment between initial expectations and actual system performance, which in turn shapes the intention to continue usage (Oliver, 2006). Bhattacherjee (2001) extended ECM by integrating perceived usefulness from the Technology Acceptance Model (TAM), reinforcing its role in predicting IS continuance intention.

ECM suggests that as users gain experience with a system, they reassess its value. If perceived performance meets or exceeds expectations, perceived usefulness increases, reinforcing satisfaction and driving long-term engagement (Thong et al., 2006). Empirical studies across e-government, e-learning, and digital service platforms consistently support satisfaction as the strongest determinant of reuse intention (Bhattacherjee et al., 2008; Limayem et al., 2008). The confirmation of expectations further strengthens perceived usefulness, reinforcing user commitment.

In the context of food-sharing platforms, continuous usage is influenced by both functional and experiential value. Users are more likely to remain engaged when platforms effectively deliver core benefits such as reducing food waste, affordability, and convenience. Additionally, social and emotional values—such as contributing to sustainability and fostering a sense of community—enhance retention (Vatanasombut et al., 2008; Stone and Baker-Eveleth, 2013). However, discrepancies between expected and actual service quality can lead to dissatisfaction, increasing the likelihood of discontinuation.

The integration of technology acceptance theories, perceived value, perceived risk, and ECM provides a comprehensive framework for analysing user adoption and retention in food-sharing platforms. UTAUT2 explains initial adoption behaviour, while perceived value and risk highlight the trade-offs influencing continued engagement. ECM further reinforces the importance of satisfaction and expectation confirmation in driving long-term user commitment. By combining these perspectives, this study presents a holistic understanding of consumer behaviour, enabling the development of strategies to enhance food-sharing platform sustainability and user retention.

3.6 Conclusion

According to Hong et al. (2024), there is a growing recognition of the limited scope of studies that encompass diverse contexts and conduct comprehensive analyses of factors influencing

the development, performance, and market acceptance of food-sharing platforms. Much of the existing research in business, engineering, and computer science has primarily focused on innovative business models, platform mechanisms, and marketing strategies, often overlooking their sustainability potential (Heidenstrøm and Hebrok, 2022; De Bernardi et al., 2023). In contrast, studies on food redistribution practices have highlighted the complexity of sharing practices, which are intertwined with multistakeholder dynamics, user behaviours, and societal development (Hong et al., 2024; Kirmani et al., 2023). Synthesising future research questions is essential to guide subsequent inquiries and expand the current knowledge base. The findings from these analyses were structured to address the following research questions:

RQ1: What is the current research situation of food sharing platforms?

The descriptive analysis revealed trends in publication years, the distribution of research across journals, the geographical distribution of authors, and the prevalent research methodologies. This provided a comprehensive overview of the current state of research on food-sharing platforms, highlighting both areas of extensive study and those requiring further exploration.

Business Models, Operational Mechanisms and Multistakeholders

The current research landscape on food-sharing platforms encompasses a diverse array of disciplines, primarily centred around business, engineering, and computer science. Researchers have devoted considerable attention to exploring the innovative business models, operational mechanisms, and marketing strategies employed by these platforms (Michelini et al., 2018; Hong et al., 2024). There is significant focus on how these platforms facilitate resource-centric matchmaking, integrate new actors, and evolve with the incorporation of advanced technologies such as AI and machine learning (Blackburn et al., 2023; Principato et al., 2023). Key themes include defining and categorising food-sharing platforms into models like 'Sharing for Money,' 'Sharing for Charity,' and 'Sharing for Community' (Michelini et al., 2018; Hong et al., 2024).

Studies have examined the orchestration mechanisms within food-sharing platforms, emphasising their role in fostering resource-centric matchmaking and integrating new participants (Blackburn et al., 2023). Micro-level interactions and knowledge integration are pivotal for platform success, particularly among sustainability-oriented digital platforms that emphasise bottom-up approaches (Hellemans et al., 2020). The integration of ICT in urban food policies and its role in facilitating food redistribution have also been highlighted,

underscoring challenges related to regulatory compliance and stakeholder engagement (Fassio and Minotti, 2019; Weymes and Davies, 2019).

Furthermore, research views these platforms as meta-organisations that drive value creation within circular economies through resource-centric matchmaking and participant engagement (Blackburn et al., 2023). The evolution of digital platforms, from basic matchmaking services to advanced systems incorporating AI and machine learning, underscores their potential for enhancing operational efficiency and sustainability (Principato et al., 2023; Thornton, 2024). Studies also delve into supply chain dynamics, exploring configurations like triadic, tetradic, and linear chains, and assessing their impacts on logistics costs, economic viability, and environmental benefits (Choi et al., 2019; Richards and Hamilton, 2018; Sundgren, 2020).

Research highlights the interconnectedness and collaborative dynamics among diverse stakeholders in food-sharing platforms, including platform providers, service providers, customers, and complementors. Platform providers drive value co-creation, service providers contribute essential assets, customers engage with services, and complementors enhance core offerings, collectively facilitating the seamless redistribution of surplus food. The advent of food-sharing platforms has transformed food redistribution supply chains, nurturing authentic social bonds and reshaping perceptions of surplus food redistribution as a moral obligation. Studies indicate a predominant division of participants into donors or recipients, with limited dual-role engagement observed. Additionally, research distinguishes community volunteers from regular users, emphasising volunteers' substantial impact on platform performance through heightened engagement and transaction success rates. Motivated by altruism and social incentives rather than financial rewards, volunteers play a crucial role in fostering user communities and augmenting platform efficacy. The multifaceted motivations driving volunteer engagement underscore the complexity of their involvement. This body of research underscores the critical importance of multistakeholder collaboration, innovative supply chain connections, and volunteer contributions in advancing the success and sustainability of food-sharing platforms.

Food sharing platforms impact and functions

Research underscores the transformative impact of food-sharing platforms on supply chains, promoting social bonds and reframing surplus food redistribution as a moral imperative (Michelini et al., 2020; Sgroi et al., 2024). These platforms significantly contribute to

sustainable development by addressing food poverty, reducing food waste, fostering social inclusion, and enhancing community cohesion. Studies highlight their environmental, social, economic, and political impacts, emphasising their role in creating efficient supply chains and raising awareness about food waste (Cane and Parra, 2020; Makov et al., 2020). Michelini et al. (2020) and Mattila et al. (2020) discuss the multifaceted benefits of these platforms, including economic efficiency, resource conservation, and social justice. Sgroi et al. (2024) focus on market-based solutions like TGTG for mitigating the adverse impacts of food waste, while Cane and Parra (2020) emphasise the practical role of digital platforms in pre-waste food detection and distribution. Makov et al. (2020) provide empirical evidence of the environmental benefits of peer-to-peer food-sharing apps, demonstrating significant reductions in food waste and emissions. Collectively, these studies underscore the platforms' contributions to sustainability and stress the importance of collaborative efforts in achieving sustainable development goals across various dimensions.

Recent studies highlight the critical functions of food-sharing platforms, particularly emphasising their transformative impact and brokerage roles in mitigating food waste. Ciulli et al. (2020) employ an interpretive theory-building approach to underscore how digital platforms serve as crucial brokers in connecting waste generators with potential recipients, thereby bridging gaps in the circular food supply chain. Their identification of brokerage functions such as connecting, informing, and integrating illuminates how these platforms facilitate waste recovery and circularity. Similarly, Kör et al. (2022) compare practices in India and the Netherlands, emphasising the role of technology in raising awareness and reducing food waste. Their findings highlight digital platforms' ability to enable surplus food sharing, offer discounts on near-expiry products, and provide meal planning features tailored to consumer preferences, thus bolstering sustainability efforts. Collectively, these studies underscore the pivotal role of digital platforms in fostering a sharing economy, promoting awareness, and facilitating sustainable practices within the food supply chain.

Challenges and essential factors food sharing platforms sustainable development

The literature underscores the potential of food-sharing platforms (FSPs) for reducing food waste and promoting sustainability while highlighting significant impediments to their effectiveness. A central concern is the ambiguity surrounding the definition of sharing, particularly when commercial practices are involved, which blurs distinctions and compromises the altruistic principles of genuine sharing economies. Financial sustainability

presents another critical challenge, as platforms must manage operational costs while striving for economic viability, raising ethical concerns about their long-term sustainability. Additionally, the rebound effect, where increased demand and consumption offset anticipated environmental benefits, diminishes the potential gains of these initiatives. Resource and infrastructure limitations, including low consumer awareness, inadequate supplier engagement, and regulatory constraints, further hinder platform efficacy. The complex task of measuring and regulating sustainability initiatives is compounded by technological deficiencies and the absence of mandatory reporting policies. Consumer distrust in the safety and quality of redistributed food, coupled with resistance to altering established consumption habits, also limits engagement. Moreover, engaging multiple stakeholders with divergent values and power dynamics within the surplus food supply chain presents formidable challenges.

The sustainability of FSPs hinges on critical factors such as robust value networks, sustainable value propositions, knowledge-enhancing activities, and the pivotal role of individual consumers within the supply chain. Research underscores these dimensions, offering insights into mechanisms that enhance platform effectiveness and sustainability. Mattila et al. (2020) emphasise the significance of the value network encompassing users, producers, and support networks, highlighting the user network's central role in creating and capturing value from food waste. This underscores the importance of actively engaging end-users to ensure the platform's sustainability outcomes, aligning with sustainability frameworks advocating for economic, environmental, and social dimensions of value.

Ranjbari et al. (2024) stress the necessity of knowledge-enhancing activities, demonstrating that enhancing consumer knowledge through education and awareness campaigns can significantly boost platform efficacy in reducing food waste. Heidenstrøm and Hebrok (2022) further underscore the importance of aligning platform design with consumer preferences to seamlessly facilitate sustainable practices. These studies highlight that consumer engagement and informed participation are crucial for the success and sustainability of FSPs, shaping their ability to effectively reduce food waste and promote sustainable practices within the food service industry.

User Behaviour and Platform Acceptance

Research underscores the critical role of user engagement and behaviour in shaping outcomes on food-sharing platforms. Studies emphasise factors such as environmental concern,

economic incentives, and community involvement as pivotal in driving user acceptance and sustained engagement (Ciulli et al., 2020; Kör et al., 2022). The sustainable development of these platforms hinges significantly on user engagement, where users actively influence platform dynamics and outcomes. This synthesis draws from multiple studies examining consumer behaviours, acceptance, intentions, and attitudes toward food-sharing platforms (FSPs).

The literature highlights the complexity of factors influencing user usage intentions. Environmental concern and perceived enjoyment are primary drivers of consumer engagement with surplus food, underlining the importance of creating positive user experiences to enhance platform appeal. Economic motivations, including price sensitivity and convenience, also significantly influence user engagement, alongside social factors that foster community and mutual support. However, conflicting findings regarding the relative impact of environmental versus economic motivations suggest a need for integrated research approaches. Moreover, gaps in understanding the determinants of continued platform use underscore the necessity for further exploration. This is crucial to sustaining long-term user engagement and ensuring the enduring success of food-sharing platforms amid evolving societal and technological landscapes.

RQ2: What are the research gaps and future research directions informed by our findings?

1. Research Gaps

Methodological Considerations

A noticeable methodological trend in this study is the reliance on case studies (n=27, 35%), which constitute a significant portion of the research methodologies employed. In contrast, other methodologies such as modelling, surveys, and literature reviews are less frequently used. The prevalence of case studies can be attributed to the relatively nascent nature of the topic, where researchers seek to understand or interpret the social phenomenon through targeted, in-depth investigations. Although these studies have contributed to our understanding of how food-sharing platforms can mitigate food waste, the limited use of diverse methodologies has constrained deeper insights.

Increasing the application of experimental research could provide empirical evidence on the effectiveness of various interventions in real-world settings. This approach can reveal cause-and-effect relationships that are not easily captured through case studies and interviews. Additionally, utilising big data analytics and machine learning techniques can help uncover

patterns and predict future trends in food-sharing behaviours. Expanding methodological approaches in this way could offer a more comprehensive understanding of the impacts and dynamics of food-sharing platforms. Conducting longitudinal studies would also enable researchers to track changes and impacts over time, offering insights into the long-term effectiveness and sustainability of food-sharing initiatives. Modelling could be employed to simulate different scenarios and optimise stakeholder interactions to enhance performance in reducing food waste.

Furthermore, we encourage scholars to explore a variety of research methodologies or adopt mixed-method approaches to investigate this topic further. Mixed methodologies combine the strengths of different approaches, providing a more holistic and comprehensive understanding of complex phenomena. By integrating both quantitative and qualitative methods, researchers can achieve deeper insights and more robust conclusions, thereby enhancing the overall quality and impact of their studies on food-sharing platforms.

Geography Analysis

Current research on food-sharing platforms is predominantly concentrated in Europe, with limited studies emerging from other regions such as North America, South America, Asia, Africa, and Oceania. Future research should broaden its geographical scope to encompass these underrepresented regions, particularly developing countries, to gain insights into the unique challenges and opportunities they present. Investigating food-sharing platforms in these areas could provide valuable information on context-specific factors that influence their success and scalability.

Conducting comparative studies between regions with well-established food-sharing platforms and those where such initiatives are emerging is another promising avenue for research. Comparative analysis can help identify best practices, effective strategies, and scalable models that can be adapted to various socio-economic and cultural contexts. By examining the operational differences and similarities of food-sharing platforms across diverse regions, researchers can develop a more comprehensive understanding of the factors contributing to their success and sustainability. Additionally, exploring the impact of regional policies, cultural attitudes, and economic conditions on the adoption and effectiveness of food-sharing platforms can offer critical insights for policymakers and practitioners. This geographical expansion and comparative approach will enrich the existing literature and provide a broader, more nuanced

perspective on the global potential of food-sharing platforms to reduce food waste and promote social innovation.

2. Future Research Directions

The evolution of food-sharing platforms marks a significant advancement in tackling food waste and improving food security through innovative technological solutions. This discussion highlights key avenues for future research aimed at optimising the societal impact and sustainability of these platforms. Table 7 summarises the proposed future research directions for food-sharing platforms.

Research Area	**Key Focus**
Business Models and Operational Mechanisms	Examine diverse business models and operational strategies across socio-economic contexts; integrate advanced digital technologies like blockchain and machine learning.
Building Connectivity Across Regions	Conduct comparative empirical analysis on bridging gaps between surplus food sources and areas of need; explore roles across sectors and global supply chains.
Financial Aspects and Sustainability	Investigate the impact on wealth distribution among socio-economic groups; assess the evolution and sustainability of community sharing models.
Multistakeholder, Value Network	Understand dynamics within multistakeholder networks including donors, recipients, volunteers, and institutional partners.
Analysing Social Network Dynamics	Use social network analysis to explore structural dynamics and knowledge sharing within food rescue networks.
Scaling Up Participation and Managing Networks	Optimise volunteer coordination, resource reallocation, and stakeholder engagement strategies to enhance network efficiency and resilience.
Enhancing Knowledge Sharing and Educational Programs	Explore mechanisms for disseminating knowledge and evaluate their impact on promoting sustainable consumption behaviours; use theoretical frameworks like the 'theory of change'.
Developing Impact Assessment Frameworks	Focus on evaluating multi-dimensional impacts and designing appropriate measurement systems tailored to circular economy initiatives within the food sector.
Integrating Digital Technologies	Investigate barriers to adoption and dynamics of user segmentation; explore the influence of platform features on participation rates; utilise technologies like blockchain and machine learning to improve transparency, traceability, and food safety.
Evaluating Governmental Food Assistance Practices	Assess the effectiveness of governmental food assistance practices in supporting food rescue activities and promoting sustainable food systems; develop evaluation frameworks and identify key performance indicators.
Impact Assessment of Mobile App Usage	Evaluate the impact of mobile app usage on reducing food waste through experimental and longitudinal studies; provide insights into the efficacy of digital interventions.

Table 7. Future Research Directions in Food Sharing Platforms

Business Models and Operational Mechanisms of Food Sharing Platforms

Understanding the diverse business models and operational strategies of food-sharing platforms is essential for their scalability and long-term viability. Future research should rigorously explore how different models adapt to various socio-economic contexts, with particular emphasis on optimising volunteer management, resource allocation, and stakeholder engagement (Alberio and Moralli, 2021; Shaw et al., 2018). The integration of advanced digital technologies, such as blockchain and machine learning, presents opportunities to enhance operational efficiency, transparency, and traceability within food redistribution networks (D'Ambrosi, 2018). Comparative analyses across different platforms can provide valuable insights into effective practices and inform strategies to maximise social impact while ensuring sustainability. For example, studies by Ciulli et al. (2020) and Michelini et al. (2018) investigate platform characteristics and educational attributes, offering insights into scalable strategies for improving user engagement and platform sustainability in diverse socio-economic settings.

Building Connectivity Across Regions and Internationalisation of Food Sharing Platforms

Future research should prioritise comparative empirical analysis to evaluate the effectiveness of various social innovation measures designed to bridge gaps between surplus food sources and areas of need across different regions. Longitudinal studies are crucial for identifying sustainable approaches that effectively connect stakeholders, community members, and policymakers (Huang and Tsai, 2021; Lombardi and Costantino, 2020). Findings from these studies can inform scalable strategies to enhance regional food redistribution networks and address disparities in food insecurity. Additionally, further research is needed to explore the roles of food-sharing platforms across different sectors and their applicability within global supply chains. Investigating variance-based models and formal propositions can shed light on how platform features, types, and contextual factors influence their effectiveness in food waste recovery. Evaluating platform strategies and performance across various cultural and geographical settings will improve understanding of their scalability and overall effectiveness.

Financial Aspects and Sustainability

Recent studies have raised concerns about the potential for sharing platforms to exacerbate income inequality (Schor, 2017). Future research should focus on understanding how these platforms influence wealth distribution among different socio-economic groups. It is crucial to

investigate whether certain segments of society benefit disproportionately from food-sharing initiatives, potentially widening economic disparities. This examination should also scrutinise the underlying business models of food-sharing platforms to ensure they contribute to social equity and economic justice, rather than exacerbating existing inequalities (Frenken and Schor, 2017).

The community sharing model, which typically operates without monetary exchange, poses questions regarding its evolution and sustainability. Future research could investigate whether and how these models might integrate financial incentives for users. Understanding the motivations and implications of introducing financial transactions within community-oriented sharing platforms is critical for assessing their sustainability and scalability. Research should explore user perceptions, community dynamics, and the impact on participation rates when financial incentives are introduced. Such insights will inform strategies to enhance community engagement and ensure the long-term viability of these platforms (Michelini et al., 2018).

Multistakeholder, Value Network

The evolution of food-sharing platforms has significantly transformed global efforts to address food waste and enhance food security. These platforms operate within complex multistakeholder networks that include donors, recipients, volunteers, and institutional partners. Understanding the dynamics within these networks is essential for optimising their effectiveness and ensuring long-term sustainability.

Analysing Social Network Dynamics

Future research using social network analysis should delve into the structural dynamics of relationships within food rescue networks. Studies should explore multiplex relations and homophily effects to deepen the understanding of knowledge sharing and innovation diffusion processes. Insights from seminal research, such as Lazega et al. (2012), can inform strategies to foster diverse network participation and strengthen collaborative efforts among stakeholders. Analysing these dynamics is critical for optimising resource allocation and enhancing the resilience of food redistribution networks.

Scaling Up Participation and Managing Networks

Facilitating the scalability of community-driven food redistribution networks necessitates focused research on optimising volunteer coordination, resource reallocation, and stakeholder

engagement strategies. Effective management practices, highlighted by Alberio and Moralli (2021) and Shaw et al. (2018), are crucial for maximising social innovation outcomes and ensuring the sustainable operation of food-sharing platforms. Research should also investigate how technology and leadership can enhance network efficiency and resilience across diverse socio-economic contexts.

Enhancing Knowledge Sharing and Educational Programs

Further exploration of knowledge-sharing activities and educational programs is imperative for raising awareness and fostering behaviour change towards reducing food waste. Research efforts, such as those by Ambati (2019) and Penco et al. (2021), should examine effective mechanisms for disseminating knowledge across diverse communities and evaluate their impact on promoting sustainable consumption behaviours. Understanding knowledge boundaries and deploying effective communication strategies are critical for scaling the impact of food redistribution initiatives. Theoretical frameworks such as the 'theory of change,' proposed by Brehmer et al. (2018) and Risso (2012), offer valuable perspectives for empirical studies on motivations, strategies, and outcomes of partnerships aimed at sustainable development.

Developing Impact Assessment Frameworks

The evolution of food sharing platforms has profoundly influenced efforts to address global food waste challenges and enhance food security through innovative technological solutions. These platforms operate within complex networks involving diverse stakeholders, from donors and recipients to volunteers and institutional partners. Understanding the functionalities and impacts of these platforms is essential for optimising their effectiveness, scalability, and sustainability. This section explores key research directions aimed at enhancing our understanding of platform operations, assessing their societal impact, and leveraging digital technologies to advance food redistribution practices. Future studies should prioritise the development of comprehensive impact assessment frameworks tailored to circular economy initiatives within the food sector. Research efforts, following Petit et al. (2018) and Dorr et al. (2021), should focus on evaluating multi-dimensional impacts and designing appropriate measurement systems. Understanding the holistic benefits and trade-offs associated with circular practices is crucial for guiding investments and shaping effective policy interventions in sustainable food systems.

Integrating Digital Technologies

Investigating the integration of digital technologies into food redistribution platforms is essential for enhancing operational efficiency and fostering user engagement. Research should explore barriers to adoption, dynamics of user segmentation, and the influence of platform features on participation rates. Technologies such as blockchain and machine learning, highlighted by D'Ambrosi (2018), offer significant potential to improve transparency, traceability, and food safety standards within redistribution processes. Future studies should aim to optimise digital platforms to maximise their social impact and scalability.

Evaluating Governmental Food Assistance Practices

Empirical studies are needed to assess the effectiveness of governmental food assistance practices in supporting food rescue activities and promoting sustainable food systems. Research efforts, following Chin and Mees (2021) and Van Meerkerk et al. (2018), should focus on developing comprehensive evaluation frameworks and identifying key performance indicators for measuring the impact of policy interventions. Understanding the role of regulatory frameworks and institutional support is essential for creating an enabling environment that fosters the success of food-sharing initiatives across diverse jurisdictions.

Impact Assessment of Mobile App Usage

Future research should employ experimental and longitudinal studies to evaluate the impact of mobile app usage on reducing food waste. By comparing the effectiveness of these apps against traditional campaigns and tracking behavioural changes over time, researchers can gain nuanced insights into the efficacy of digital interventions in promoting sustainable consumption behaviours. Additionally, understanding demographic variations in app adoption and effectiveness can inform tailored interventions aimed at maximising impact across diverse user groups. This approach will advance efforts to mitigate food waste through technological innovations.

User Behaviour and Platform Acceptance

The sustainable management of food resources is increasingly recognised as a critical global challenge, with food-sharing platforms emerging as innovative solutions to reduce waste and promote sustainability. These platforms rely heavily on the active engagement and participation of individual users, who play a central role in shaping their success and effectiveness. Understanding user behaviour and platform acceptance within these contexts is essential for

optimising strategies that enhance sustainability outcomes. This literature review explores the pivotal role of individual users in driving the sustainability and success of food-sharing platforms. It identifies key gaps in existing research.

Food Sharing Platforms Acceptance

Understanding user behaviour and platform acceptance within food-sharing platforms is crucial for their sustainability and effectiveness. Individual users play a pivotal role not only as consumers but also as active participants who influence the outcomes and success of these platforms through their engagement and behaviours. Their decisions to contribute surplus food, utilise platform resources, and advocate within their communities directly impact the platform's ability to achieve its goals of reducing food waste and promoting sustainable practices. Moreover, user satisfaction and loyalty are critical for sustaining the platform's viability over the long term. Disengagement or dissatisfaction among users can hinder growth and undermine efforts towards sustainability.

One significant gap in current research is the prevalence of case studies focused on single digital sharing platforms, which limits the generalisability of findings across different types of platforms. Additionally, existing studies often lack a comprehensive exploration of the diverse factors influencing user behaviour, leading to conflicting results on what motivates users. For instance, while some research emphasises environmental concerns as a primary motivator, others highlight economic incentives or convenience factors as more significant drivers. Integrative research efforts are essential to reconcile these discrepancies and provide a holistic understanding of user intentions across various platforms.

Food Sharing Platforms Continuous use

Another significant gap identified in the literature is the limited research on users' continued use and sustained participation in food-sharing platforms. While some studies have explored initial usage intentions, understanding the factors that drive long-term engagement is essential for the sustainable development of these platforms. Comprehending what drives continued use can help platform developers design features and services that enhance user satisfaction and loyalty, which is vital for maintaining operations and expanding impact.

As users become more familiar with food-sharing platforms, their motivations and expectations are likely to evolve. Initial motivations might be driven by curiosity or immediate economic

benefits, but long-term engagement might depend on deeper factors. Continuous research is needed to track these changing motivations and ensure that platforms can adapt to meet users' evolving needs. This adaptability is crucial for maintaining user interest and fostering a loyal user base.

Notably, there is a scarcity of research that specifically investigates the continued use of food-sharing platforms. Magno and Cassia (2024) offer a preliminary examination by integrating the Technology Acceptance Model (TAM) with self-determination theory to explore intentions for sustained usage. Their study identified perceived ease of use, economic motivation, and environmental motivation as key factors driving continued usage. However, their findings are based on a small sample of restaurants in Italy that use the food surplus platform, Too Good To Go. Consequently, further research is recommended to explore issues surrounding continuous use across various contexts and platforms.

Chapter 4. Study 1: Technology Acceptance of Food Sharing Platforms

4.1 Introduction

In recent years, the burgeoning issue of food waste has garnered significant attention from researchers, policymakers, and the public. The Food and Agriculture Organization (FAO) reports that nearly one-third of global food production is wasted each year. This waste results in significant resource loss and contributes to environmental challenges, including greenhouse gas emissions and deforestation. Concurrently, food insecurity remains a persistent problem, with millions of individuals lacking access to sufficient and nutritious food. Addressing these twin challenges requires innovative solutions that can effectively reallocate excess food to individuals in need.

Digital food-sharing platforms have become an encouraging approach to reducing wasted food and improving food security. These platforms enable the redistribution of excess food from sources such as restaurants, supermarkets, and individuals to consumers who are willing to utilise it. Notable platforms such as OLIO, Too Good To Go, and FoodCloud have gained popularity, providing users with the opportunity to access surplus food at little or no cost. These platforms contribute not only to reducing food waste but also to fostering community involvement and promoting environmental sustainability.

Study 1 aims to address the first identified gap from this review, specifically: Food Sharing Platforms Acceptance. The success of food sharing platforms largely hinges on user acceptance and sustained engagement. Examining the elements that affect technology acceptance in this context is critical for the development and refinement of these platforms. Theoretical models and frameworks of technology acceptance, such as the Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), and the Unified Theory of Acceptance and Use of Technology (UTAUT), offer valuable insights into user behaviour and adoption patterns. These frameworks have been widely applied to various technological innovations, highlighting key determinants such as perceived usefulness, ease of use, social influence, and facilitating conditions. Utilising the UTAUT2 framework, an expansion of the original UTAUT framework that includes factors like hedonic motivation, price value, and habit, this study seeks to provide a thorough insight into user objectives and behaviours. Additionally, this study addresses specific challenges and concerns unique to the context of food sharing, including food safety,

emotional factors, and logistical issues.

Based on the findings, this study identified several critical factors influencing consumer acceptance of food sharing platforms, framed within the UTAUT2 framework. In the context of food redistribution, performance expectancy encompasses both Sustainable Performance and Food Performance. Sustainable Performance refers to consumers' belief in the efficacy of food sharing platforms in facilitating surplus food redistribution to reduce wasted food and poverty in nutrition. Food Performance pertains to the quality and usability of the redistributed food on food sharing platforms, significantly influencing consumers' willingness to use such platforms. Effort expectancy, which includes the ease of use and the availability of information, substantially affects user adoption. Social influence plays a substantial role, with recommendations from family, friends, and social media significantly impacting user adoption. Facilitating conditions include food accessibility. Higher food accessibility implies easier access to redistributed food from platforms, whereas lower accessibility requires more time and energy. Hedonic motivation, or the enjoyment and satisfaction users derive from participating in food sharing activities, motivates their continued use. Price value, which refers to the financial benefits and cost savings associated with using food sharing platforms, is a significant motivator for users. Beyond the UTAUT2 factors, the study identified additional factors that influence user adoption of food sharing platforms. Emotional concerns, such as negative emotions like awkwardness and shyness when collecting food from cooperative restaurants or volunteers, can hinder platform use. Safety concerns, which include personal safety, food safety, and the perceived safety of interactions, influence user willingness to engage with food sharing platforms.

The theoretical insight provided by this study lies in its implementation and extension of UTAUT2 framework to the context of food sharing platforms. By integrating constructs such as hedonic motivation, price value, and habit into the examination of technology acceptance, this research offers a nuanced understanding of the diverse factors influencing user behaviour. Additionally, the study identifies and explores unique factors specific to food sharing, such as emotional concerns and safety issues, which are not traditionally accounted for in the UTAUT2 framework. This enhances the model's explanatory power and relevance to emerging technological contexts. By addressing these specific challenges and extending the theoretical framework, this research not only addresses current gaps in the literature but also provides a robust foundation for future research on technology acceptance in similar sustainability-

oriented domains. The findings underscore the importance of considering both traditional technology acceptance factors and context-specific variables, thus enriching the theoretical landscape of information systems and technology adoption research.

The second section reviews foundational theories and models of technology acceptance, such as TRA, TAM, TPB, and UTAUT, and introduces the UTAUT2 model, incorporating constructs like hedonic motivation, price value, and habit. The next part details the research design, focusing on qualitative methods like semi-structured interviews to explore factors influencing user intentions toward food sharing platforms, and describes the participant selection process and thematic analysis approach. This is followed by presenting key findings within the UTAUT2 framework, highlighting factors such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value, as well as additional factors like emotional and safety concerns, connecting these to existing literature. Finally, the study concludes by summarising its insights, reiterating its academic and practical insights, and suggesting guidelines for future studies to improve the adoption and effectiveness of food sharing platforms.

This chapter presents the qualitative study on user acceptance of food-sharing platforms, employing the UTAUT2 framework. It explores user motivations, barriers, and engagement factors through thematic analysis. The qualitative insights from Chapter 4 inform the development of hypotheses and survey instruments used in the quantitative study in Chapter 5. The themes identified serve as a basis for the constructs tested in the subsequent analysis.

4.2 Background

4.2.1 Technology Acceptance Theories

The domain of technology adoption theories is a well-established and critical area within Information Systems (IS) literature. The persistent challenge of achieving user acceptance of technology continues to be a major concern for management (Schwarz and Chin, 2007). This issue has captivated IS/IT researchers, to the point where studies on technology adoption and diffusion are now regarded as a well-established area of research (Venkatesh et al., 2003). Numerous studies in this field have utilised a broad spectrum of exploratory techniques, investigating different systems and technologies across various settings. Even a brief review of the literature highlights a range of perspectives from stakeholders, technologies, contexts,

levels of analysis, theories, and research methodologies (Williams et al., 2009). This body of research has resulted in the creation of numerous theoretical models aimed at explaining individuals' intentions to adopt innovations. These models are rooted in disciplines such as data systems, behavioural science, and social science (e.g., Davis et al., 1989; Taylor and Todd, 1995; Venkatesh et al., 2003).

Originating derived from social psychology, the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) serves as a forerunner of numerous frameworks and is a widely utilised framework for explaining human behaviour in the context of technology acceptance (Venkatesh et al., 2003). TRA suggests that an individual's actions are influenced by their behavioural intentions, which are shaped by their attitude towards the action and the influence of perceived social norms (Fishbein and Ajzen, 1975). This framework provided the foundation for two significant theoretical advancements: the more expansive Theory of Planned Behaviour (TPB) (Ajzen, 1991) and the more streamlined Technology Acceptance Model (TAM) (Davis, 1989). Davis (1989) adapted TRA to explore individual technology acceptance, demonstrating that the variance explained aligned with other behavioural studies utilising TRA. The TAM identifies two core beliefs—perceived usefulness and perceived ease of use—as key factors influencing IS/IT adoption. According to TPB, actions are motivated by intentions and perceived behavioural control, with intentions being influenced by perspectives on the action, subjective norms, and perceived control over the behaviour (Ajzen, 1991).

The Decomposed Theory of Planned Behaviour (DTPB) (Taylor and Todd, 1995) combines aspects of combining TPB and TAM to deliver a more holistic view of technological implementation. Additionally, a large body of psychological research has utilised broad motivational theory to analyse personal behaviours. In the IS/IT field, Davis et al. (1992) leveraged motivational theory to explore the acceptance and application of emerging technologies. Moore and Benbasat (2001) further adapted Rogers' Innovation Diffusion Theory (IDT) to study individual acceptance of technology. Moreover, Social Cognitive Theory (SCT) has been widely employed to interpret human actions. Compeau et al. (1999) extended this theory to the context of computer usage, and its flexible nature has allowed for its broader application in the acceptance and utilisation of IS/IT (Venkatesh et al., 2003). This extensive range of models and theories has led to some confusion among researchers, who often find themselves selecting elements from a wide array of competing frameworks.

4.2.2 UTAUT and UTAUT2

In response to the confusion arising from the multitude of competing models and to harmonise theoretical discussions on technology adoption, Venkatesh et al. (2003) developed UTAUT. UTAUT has gained significant recognition for its comprehensive approach, synthesising key elements from eight influential frameworks to predict individuals' adoption and utilisation of technology. These models include the Theory of Reasoned Action (Fishbein and Ajzen, 1975), the Technology Acceptance Model (Davis, 1989), the Motivational Model (Davis et al., 1992), the Theory of Planned Behaviour (Ajzen, 1991), the combined TAM and TPB (Taylor and Todd, 1995), the PC Utilisation Model (Thompson et al., 1991), Innovation Diffusion Theory (Moore and Benbasat, 2001), and Social Cognitive Theory (Compeau et al., 1999). These foundational frameworks have been widely and successfully applied in numerous studies exploring technology and innovation acceptance and diffusion across diverse fields, such as Information technology, market studies, social psychology, and business management.

Venkatesh et al. (2003) conducted a half-year investigation across four organisations, demonstrating that the eight underlying models explained between 17% and 53% of the variance in users' intentions to adopt IT. Crucially, UTAUT outperformed these individual models, achieving an adjusted R^2 of 69 percent, thereby demonstrating its superior explanatory power (Venkatesh et al., 2003). Through the incorporation of aspects from multiple models, UTAUT provides a comprehensive and cohesive framework for examining technology acceptance, addressing the complexities and diverse perspectives inherent in earlier research. According to Venkatesh et al. (2003), UTAUT proposes four key elements that affect the intention and application of information technology.

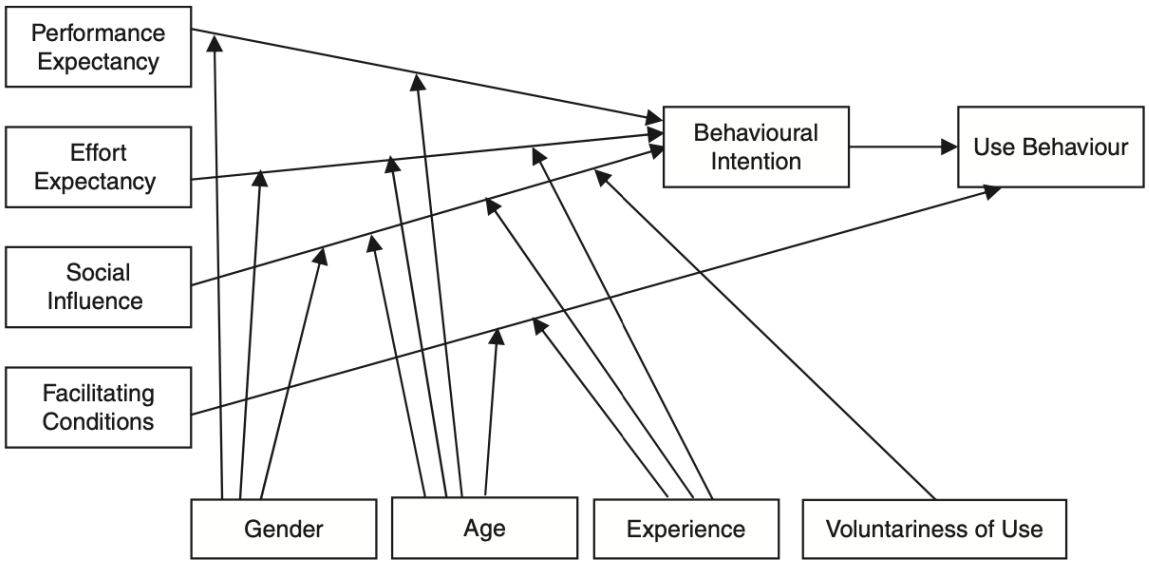

Figure 12. Unified Theory of Acceptance and Use of Technology. **Source:** Venkatesh *et al*. (2003)

Performance Expectancy

Performance expectancy refers to the belief that using a particular system will improve job performance (Davis et al., 1992). As a key construct in UTAUT, it helps explain technology adoption motivations. Performance expectancy draws from several established models, including perceived usefulness from TAM, extrinsic motivation from the Motivational Model, job-fit from the Model of PC Utilisation, relative advantage from Innovation Diffusion Theory (IDT), and outcome expectations from Social Cognitive Theory (SCT) (Compeau et al., 1999). Each concept highlights how performance benefits shape user behaviour. For example, perceived usefulness reflects how much a system enhances performance, while relative advantage compares an innovation's benefits to its predecessor. Empirical studies, such as Brown et al. (2003) on mobile banking, show that a higher perceived relative advantage strongly predicts adoption. Across models, performance expectancy consistently emerges as the strongest indicator of the intent to adopt technology, indicating that when individuals see performance benefits, they are more predisposed to utilise the technology.

Effort Expectancy

Effort expectancy relates to the simplicity with which individuals can utilise a designated system or technology, a concept originating from the perceived simplicity of utilisation factor

in TAM. As Davis (1989) suggests, systems regarded as user-friendly are more likely to be adopted, with interface simplicity, clear instructions, and a positive user experience being key determinants. During the initial adoption phase, users may face challenges such as learning system navigation and understanding functionalities. If the system is perceived as complex, adoption becomes less likely, whereas a user-friendly system encourages uptake. As users become more familiar with the system, initial concerns about ease of use typically diminish, with attention shifting towards the system's effectiveness in achieving desired outcomes (Venkatesh and Davis, 2000). Empirical research, such as Deng et al. (2011), shows that both performance expectancy and effort expectancy substantially anticipate the intention to employ Web-Based Question and Answer Services (WBQAS), highlighting the significance of both usefulness and ease of use. Moreover, effort expectancy, along with performance expectancy, facilitating conditions, and social influence, collectively shapes overall user intention.

Social influence

Social influence pertains to the degree to which individuals feel pressured by others to use a particular technology. This concept is closely related to the "subjective norm" in TAM. Moore and Benbasat (1991) highlight "image" as how using a technology can enhance an individual's standing within a social group. Social influence captures the impact of external opinions on technology adoption, particularly in mandatory contexts where the perceived expectations of supervisors or colleagues strongly affect usage intentions. In voluntary settings, subjective norms tend to have less influence, demonstrating how social factors vary by context. Social pressure from peers or authorities is especially significant in organisational environments, where employees may feel compelled to adopt a new system due to expectations or peer use. Gonzalez et al. (2012) found that social pressure plays a key role in IT adoption, particularly in hierarchical cultures where conformity is valued. Additionally, individuals may adopt technology to enhance their image or status within a social group.

Facilitating Conditions

Facilitating conditions pertain to the extent to which individuals perceive that the organisational and technical infrastructure supports the use of a system. This concept is key to understanding technology adoption, as it addresses practical factors that enable or hinder effective use. Facilitating conditions include access to technical support, necessary resources, and training (Keong et al., 2012). Within UTAUT, these conditions incorporate elements of perceived behavioural control from TPB, linking organisational efforts to remove barriers with

users' intentions to adopt the system. Even if users expect high performance and find the technology easy to use, inadequate support can still pose obstacles. Gupta et al. (2008) found that facilitating conditions, alongside performance expectancy, effort expectancy, and social influence, positively impact the adoption of ICT.

Evolution to UTAUT2

Despite the widespread acceptance of UTAUT, Venkatesh et al. (2012) recognised the need to refine the model to better capture consumer behaviour, leading to UTAUT2. This updated version introduces three further constructs—pleasure-driven motivation, value of price, and routine—significantly enhancing its explanatory power. Hedonic motivation refers to the enjoyment obtained from utilising technology, recognising the role of affective experiences in user acceptance. Price value involves the user's assessment of the balance between cost and benefit, while habit reflects the automaticity of behaviour formed through repetition. These additions improved the model's ability to explain behavioural intention from 56% to 74% and technology use from 40% to 52%, highlighting the importance of emotional, economic, and habitual factors. UTAUT2 thus provides a more comprehensive framework for understanding technology acceptance in personal contexts, addressing both functional and emotional drivers. In UTAUT2, personal variations including age, gender, and experience are proposed to mitigate the impacts of the new constructs on intention to behave and technology utilisation. Venkatesh et al. (2012) found that the influence of hedonic motivation, price value, and habit varies depending on these factors, reflecting the nuanced role of individual characteristics regarding technology adoption.

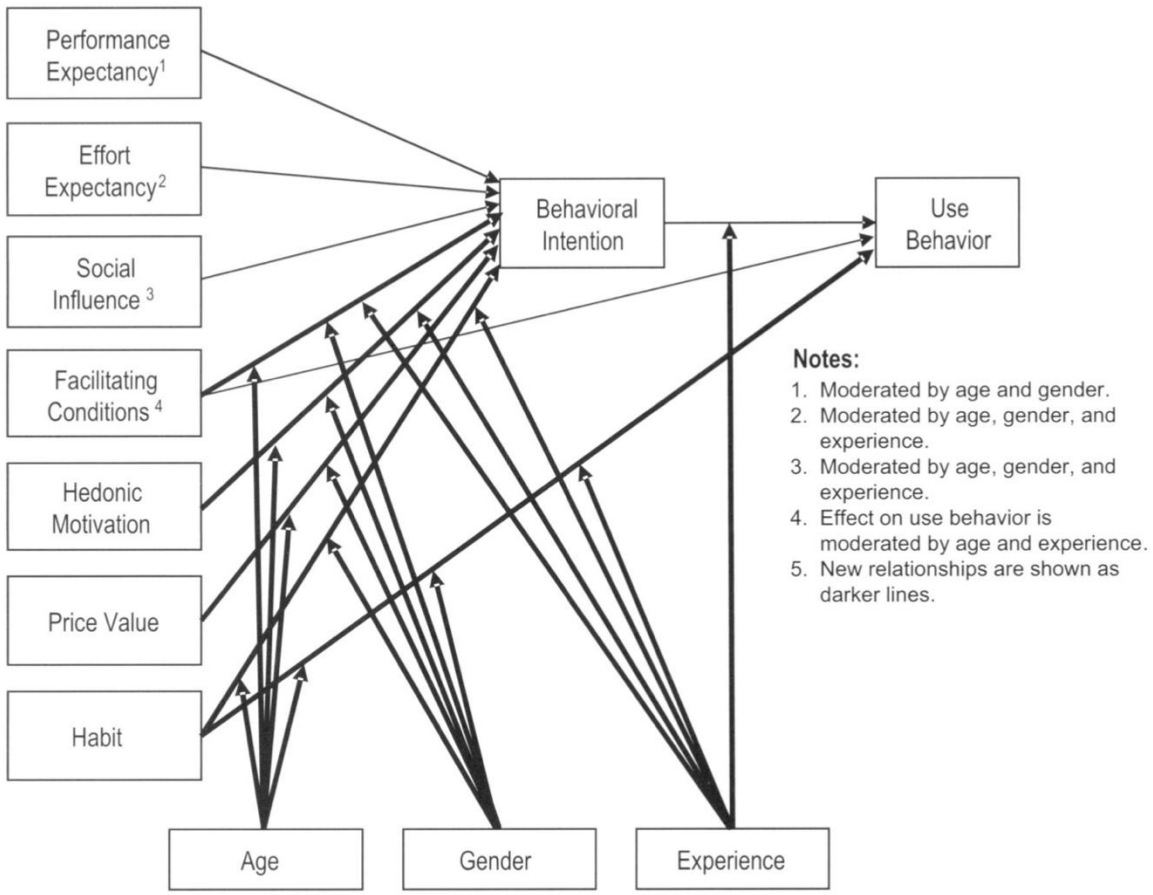

Figure 13. Unified Theory of Acceptance and Use of Technology 2 **Source:** Venkatesh *et al*. (2012)

Hedonic Motivation

Hedonic motivation refers to the enjoyment or enjoyment gained from utilising a technology, playing a crucial role in its acceptance and use (Brown and Venkatesh, 2005). This construct highlights the intrinsic satisfaction users gain beyond the functional benefits of technology. In information systems research, hedonic motivation, often termed perceived enjoyment, has been directly linked to technology adoption (van der Heijden, 2004). Users are more inclined to adopt and consistently utilise a technology if they perceive it as enjoyable. In consumer contexts, hedonic motivation is a key factor, particularly for leisure-oriented technologies like social networking sites and multimedia applications (Brown and Venkatesh, 2005). Yang (2010) found that hedonic performance expectancy, alongside utilitarian benefits, is crucial in driving mobile shopping adoption, with entertainment emerging as the most influential factor. Similarly, Pillai and Mukherjee (2011) showed that perceived enjoyment mediates user acceptance of social networking websites. Bae and Chang (2012) also demonstrated that enjoyment and entertainment significantly influence smart TV purchase intentions. Essentially, hedonic

motivation encapsulates the emotional and affective dimensions of technology use, recognising that users are driven by both practical benefits and the joy and pleasure they experience.

Price Value

Price value refers to the user's evaluation of the cost-benefit balance when adopting a technology, playing a key role in consumer decisions. Unlike employees in organisational settings, consumers bear the financial costs of technology use, including purchase prices, subscription fees, and indirect costs like setup and maintenance. The perceived financial outlay, combined with the benefits of using the technology, influences behavioural intentions. Venkatesh et al. (2012) found that price value significantly affects behavioural intention, with age and gender moderating this effect. Younger users tend to be more price-sensitive, while older users may prioritise functionality over cost. Gender differences also affect how cost-benefit evaluations are made, with usage patterns and preferences varying between men and women.

Experience and Habit

The final construct added to UTAUT is habit, which, while related to experience, is distinct from it. Venkatesh et al. (2003) conceptualised experience based on the passage of time, while habit, as defined by Limayem et al. (2007), refers to the automatic performance of behaviours resulting from learning. Kim et al. (2005) equated habit with automaticity, where repeated behaviour becomes automatic and requires less conscious effort. Habit can be viewed as prior behaviour, influencing future actions, or as the degree to which a behaviour is regarded as automatic. In technology use, habit plays a crucial role—repeated use reduces cognitive effort, integrating the behaviour into daily routines. This automaticity often leads to continued technology use, even when faced with minor challenges. Previous IT experience also predicts future use and system adoption, as shown by Kijsanayotin et al. (2009), highlighting the importance of both experience and habit in understanding technology adoption and usage patterns.

Applications and Adaptations of UTAUT2

The UTAUT2 framework has been widely applied across numerous studies to explore technology acceptance in different contexts. For example, Yang (2010) found that hedonic motivation significantly influenced U.S. customers' plans to utilise mobile shopping services, while Bae and Chang (2012) highlighted the function of perceived enjoyment and habit during

the adoption of smart TVs. These studies underscore the significance of emotional and habitual elements in influencing consumer technology adoption, demonstrating UTAUT2's ability to capture a broader range of influences compared to its predecessor. Williams et al. (2015) performed a systematic review of 174 articles using the UTAUT model, revealing its extensive application in both general-purpose and specialised business systems. The predominant methodologies included cross-sectional surveys alongside structural equation modelling, with SPSS frequently employed for data analysis. Performance expectancy and behavioural intention consistently emerged as the strongest predictors of technology acceptance. Many studies also introduced additional variables into the original UTAUT model, providing new insights and adaptations.

In the context of food-sharing platforms, Moltene and Orsato (2021) applied UTAUT2, highlighting the significance of effort expectancy, while also introducing constructs such as trust and gratefulness. Kirmani et al. (2023) incorporated the Theory of Planned Behaviour (TPB) to examine the roles of subjective norms, attitudes, and perceived behavioural control in shaping consumers' intentions towards food-sharing. These adaptations and integrations with other models illustrate UTAUT2's versatility and potential for refinement through the inclusion of additional variables and contextual factors.

Despite its widespread use, common limitations in UTAUT2 studies include biased samples and a focus on single subjects. Williams et al. (2015) stressed the need for more diverse and representative samples to enhance the generalisability of UTAUT2 findings. Chang (2012) similarly emphasised the need for broader empirical validation across different contexts and populations. This study, therefore, focuses on the specific context of food-sharing platforms, addressing a gap in the literature, which has largely examined UTAUT2 in more general or unrelated technological contexts. By applying UTAUT2 to food-sharing, this research offers valuable insights into how the model can be adapted to specific technological environments.

Furthermore, although UTAUT2's six constructs account for a substantial portion of variance in adoption and usage behaviours, individual characteristics related to user dispositions may also play a role (Dwivedi et al., 2019). To explore this, our research employs semi-structured interviews to gain deeper insights into consumers' perceptions of food-sharing platforms. This approach captures the nuances of user experiences and identifies additional factors influencing technology adoption.

4.3 Methodology

4.3.1 Data Collection

Most research on digital platform acceptance factors primarily employs quantitative methods, which often involve presenting participants with closed-ended questions and particular response options (Graham-Rowe et al., 2014; Harvey et al., 2020; Lucas et al., 2021). This methodological approach can limit respondents' ability to provide diverse insights or fully express their viewpoints on particular issues (Graham-Rowe et al., 2014), potentially restricting the depth of participant input. In contrast, qualitative research allows for a more nuanced exploration of complex subjects, providing a deeper understanding.

Current studies on user intentions toward food sharing platforms reveal a multifaceted landscape with numerous influential factors. Research by Hua et al. (2023), Mazzucchelli et al. (2021), and Yamabe-Ledoux and Hori (2023) highlights different determinants of user engagement and platform acceptance, such as environmental concern, economic motivations, perceived playfulness, community engagement, and social factors. However, the diversity in findings underscores a significant gap in achieving a comprehensive understanding of user intentions. Different studies often emphasise various primary factors, and there are frequently conflicting results regarding which factors are most influential. This lack of consensus suggests that the complexities of user behaviour and platform acceptance are not fully captured through quantitative methods alone. The reliance on predefined questions and answer choices in quantitative research may inadvertently limit the ability to uncover nuanced insights and participant perspectives. Thus, the intricate nature of factors influencing user intentions toward food sharing platforms necessitates a methodological shift.

Qualitative methods offer a valuable complement to quantitative approaches in this context. By employing techniques such as semi-structured interviews, researchers can delve deeper into the thoughts, motivations, and experiences of users. This approach allows participants to communicate their views in their own expressions, providing richer and more detailed data. Semi-structured interviews, in particular, offer the flexibility to explore emerging themes and issues that may not be anticipated by the researcher. This adaptability is crucial for understanding the multifaceted and dynamic nature of user behaviour on food sharing platforms. Moreover, qualitative methods can help identify and understand the underlying reasons behind conflicting findings in quantitative studies. By capturing the complexity of user

experiences and contextual factors, qualitative research can offer explanations for why certain factors may be more influential in different settings or for different user groups. This deeper understanding can guide the development of more efficient approaches for enhancing user engagement and acceptance of food sharing platforms.

Given the absence of consensus on the factors hindering consumer platform use, employing semi-structured interviews in this research is essential. This approach will provide comprehensive insights into consumers' thoughts and perspectives, uncovering the nuanced and context-specific factors that influence their intentions and behaviours. By integrating qualitative methods, this study seeks to bridge the deficiency in the current understanding of food sharing platform acceptance, offering a more holistic and detailed picture of user engagement.

Semi-structured interviews

Semi-structured interviews offer a balanced approach between structured interviews, which follow a fixed format, and unstructured interviews, which are more intuitive and flexible (Salmons, 2021). the unrestricted character of many questions in semi-structured interviews promote interviewees to provide detailed and expansive responses, uncovering underlying motivations, attitudes, and beliefs that structured interviews might miss. This method combines the consistency of a structured framework with the adaptability of open-ended questions, making it ideal for exploring complex topics in depth.

The flexibility inherent in semi-structured interviews allows for tailored planning, questioning, and follow-up, enabling a comprehensive investigation of potentially undetected causal factors (Kvale, 2012). A significant advantage of this approach is its adaptability to the interviewee's context and experiences, which facilitates the gathering of nuanced insights that reflect their unique perspective. Furthermore, the interactive aspect of semi-structured interviews cultivates rapport between the interviewer and the interviewee, making participants feel more at ease and encouraging them to share openly. This rapport enhances the authenticity and depth of responses, resulting in richer and more meaningful data. Thus, the conversational flow of semi-structured interviews allows for a more natural discussion, leading to a deeper and more comprehensive understanding of the subject matter.

4.3.2 Participants and Sampling Procedures

In this research on food sharing platforms, the primary unit of data collection consisted of individuals with prior experience using these platforms. The data collection period extended from October 2022 to February 2023. Focusing on individuals with firsthand experience is crucial for understanding the diverse perspectives and behaviors linked to the adoption and utilisation of food sharing platforms. By targeting these users, the research aimed to gather in-depth insights into their motivations, challenges, and overall experiences.

To identify eligible interviewees, we utilised user groups from prominent food sharing platforms such as OLIO, Too Good To Go, and FoodCloud, as well as food sharing communities on social media platforms like Twitter and Facebook. These groups and communities provided a concentrated pool of potential participants who are actively engaged in food sharing practices. OLIO, Too Good To Go, and FoodCloud are well-known platforms that facilitate the sharing of surplus food, making their user bases particularly relevant for this research. Similarly, food sharing communities on social media serve as vibrant hubs where users exchange tips, share experiences, and discuss the benefits and challenges of food sharing.

Engaging with these specific user groups and communities was strategic for several reasons. Firstly, it ensured that the participants had relevant and recent experience with food sharing platforms, thus providing data that is both current and applicable. Secondly, these platforms and communities often attract individuals who are passionate about reducing food waste and are more likely to provide detailed and thoughtful responses. By reaching out through these channels, we connected with a diverse range of users, from those who occasionally use food sharing platforms to those who are more deeply involved and knowledgeable about the practices and impacts of food sharing. The use of social media groups and platform-specific user communities also facilitated efficient and targeted recruitment. Announcements and invitations to engage in the survey were posted in these groups, explaining the objective of the research and encouraging users to share their experiences.

Recruitment of Participants Using Snowball Sampling Technique

Additionally, to identify further food-sharing platform users, the snowball sampling technique was employed. Snowball sampling is a non-probability sampling method in which initial respondents are used to identify additional participants with similar characteristics or interests (Johnson et al., 2014). This technique leverages the social networks and relationships of initial

respondents to recruit further participants, creating a chain referral process. By relying on recommendations from initial respondents, we were able to identify additional interviewees who were actively engaged in food-sharing platforms and had relevant experiences to share.

This method proved particularly effective for several reasons. Firstly, it allowed us to reach a broader and more diverse sample of participants than would be feasible through direct recruitment alone. Initial respondents, already involved in food-sharing communities, had established trust and rapport within their networks. Their endorsements and referrals encouraged others to participate, thereby enhancing the credibility and reliability of the sample. Secondly, snowball sampling helped ensure that participants had a genuine and active interest in food-sharing platforms, as they were recommended by peers who recognised their involvement and relevance to the study.

To reach out to potential interviewees, we posted invitations in relevant groups on Twitter and Facebook, targeting communities dedicated to food sharing and waste reduction. Additionally, we contacted potential participants through direct messaging on these platforms, providing a personalised approach to recruitment. In these communications, we outlined the intent of the research and invited them to participate in the study. Once potential interviewees expressed interest, we sent them detailed information about the study, including the interview protocol and consent forms. This information outlined the aims of the research, the nature of the data collection process, and the participants' role in the study. Providing this information upfront helped establish transparency and trust, ensuring that participants were fully informed and comfortable with their involvement. We also scheduled appointments for the interviews, accommodating participants' availability and preferences. We sent them the interview protocol, consent forms, and scheduled appointments while addressing any queries that arose prior to their involvement in the research. This approach ensured that participants had a clear understanding of the research objectives, the data collection process, and their role in the study.

4.3.3 Interview Procedures

The study employed Messenger and Teams platforms to conduct interviews in both English and Chinese, ensuring linguistic inclusivity and accommodating participants' language preferences. The interviews lasted between 20 and 40 minutes per participant, allowing for in-depth discussions while respecting participants' schedules. Prior to the interviews, participants

provided informed consent, ensuring they were entirely cognisant of the study's aims, methods, and their rights. All interview sessions were recorded and subsequently transcribed to capture the complete and accurate content of each conversation. The transcriptions were then translated into English by a bilingual researcher to maintain the integrity of the data across languages. This translation process was followed by a rigorous review to establish the correctness and consistency of the translated transcriptions. To preserve the anonymity of the interviewees, alias numbers were assigned during the transcription process, ensuring that individual identities were protected throughout the data analysis.

To confirm the consistency of the interview process, the development of the interview protocol was informed by relevant literature, as outlined in Table 9. The semi-structured interviews were structured around predetermined topics, while allowing interviewees the opportunity to raise additional issues and comments to provide a comprehensive understanding of their experiences (Longhurst, 2003). The interview guide consisted of four segments. The first segment collected demographic information, including age, gender, educational background, and employment status. The second segment explored the interviewees' views on food waste and food poverty, as well as their opinions on how food-sharing platforms can contribute to addressing these issues. The third segment focused on their experiences and perceptions of using food-sharing platforms, covering aspects such as ease of use, functionality, and overall effectiveness. The final segment introduced questions about continuous usage intention, aiming to examine the factors that influence their likelihood of consistently using food-sharing platforms over time. This section sought to understand what motivates or discourages sustained engagement with the platforms. During the interviews, an open and flexible approach was maintained, allowing interviewers to delve into key factors for each participant. The questions were designed to elicit a broad range of perspectives, providing valuable insights into attitudes, behaviours, and the factors influencing both the initial adoption and ongoing use of food-sharing platforms.

The interview process continued until information saturation was reached, a point at which no new insights were emerging from the data. According to Glaser and Strauss (2008), theoretical saturation occurs when additional information fails to reveal new properties or dimensions relevant to the study. This phase is crucial for ensuring that the collected data is comprehensive and robust. In our research, theoretical saturation was achieved when further data no longer significantly enhanced or modified the identified themes, indicating that a thorough understanding of the subject matter had been obtained. Consequently, a sample size of 32

participants was identified based on information saturation. Table 8 presents the demographic characteristics of the participants, providing a detailed overview of the sample population.

No.	Gender	Age	Education	Occupation	Income (£k)	Nationality
1	Female	28	Master	Employee	25	Chinese
2	Male	27	Master	Self-employed	35	Chinese
3	Female	30	Bachelor	Employee	23	Polish
4	Male	25	Secondary school	Self-employee	20	Polish
5	Male	33	Secondary school	Employee	14	Irish
6	Female	51	Bachelor	Retire	5	British
7	Female	35	Bachelor	Employee	30	British
8	Male	26	Bachelor	Student	0	Chinese
9	Male	31	Master	Employee	17	Chinese
10	Female	22	Bachelor	Student	1	French
11	Female	25	Master	Employee	4	British
12	Female	25	Master	Student	0	Chinese
13	Male	20	College	Student	0	British
14	Female	24	Bachelor	Employee	14	Chinese
15	Female	27	Bachelor	Employee	20	British
16	Female	18	Secondary school	Student	0	British
17	Female	25	Master	Employee	21	Malaysian
18	Female	37	Bachelor	Employee	35	Thai
19	Female	22	Bachelor	Student	0	Chinese
20	Male	26	Master	Employee	6	British
21	Female	27	Bachelor	Employee	12	Irish
22	Male	21	Secondary school	Student	5	Chinese
23	Female	24	Bachelor	Student	0	Chinese
24	Female	21	Bachelor	Student	0	Chinese
25	Female	29	Master	Self-employed	8	French
26	Male	31	Bachelor	Employee	11	British
27	Female	23	Bachelor	Employee	15	Irish
28	Male	28	Secondary school	Employee	28	British
29	Male	29	Bachelor	Employee	45	British
30	Male	38	Master	Employee	47	British
31	Female	26	Master	Employee	32	Chinese
32	Female	27	Bachelor	Employee	21	British

Table 8. Participant Demographics

Demographic Information
1. What is your gender?
2. What is your age?
3. What is the highest level of education you have completed?
4. What is your current occupation?
5. What is your current annual income?
6. What is your nationality?
Food Waste and Food Sharing Apps
7. What is your opinion on food waste and food poverty?
8. What are your thoughts on using apps to recycle/redistribute food?
9. Could you please share which food sharing software you have used and how long have you used it?
Thoughts and feelings about using food-sharing Apps
10. What motivates you to use food-sharing apps? / What are your reasons for using these food sharing apps?
11. During your experience using food sharing apps, have you found yourself mainly providing food, receiving food, or both? Can you explain the reasons behind your choice?
12. In your opinion, what are some of the factors that may influence or prevent you from using this food-sharing application? Could you elaborate on your reasoning behind these factors?
13. Could you please describe your experience of using food-sharing apps?
14. In your experience using these food recycling platforms, do you have any suggestions or comments you would like to share?
Sustained Engagement and Future Use
15. What factors would motivate you to continue using food-sharing apps in the future?
16. Have you ever stopped or considered stopping the use of a food-sharing app? If so, what were the reasons behind this decision?
17. What features or improvements would make you more likely to continue using food-sharing apps over the long term?

Table 9. Interview Guide

4.3.4 Data Analysis

For data analysis, we employed a thematic analysis method, which offers a systematic and rigorous approach to identifying, analysing, and interpreting patterns or themes within qualitative data (Braun and Clarke, 2006). This method was particularly suited to our research objectives, which aimed to uncover the motivations and concerns of users regarding the adoption of digital food-sharing platforms.

Thematic analysis allowed us to explore the data in an iterative and inductive manner, enabling themes and patterns to emerge directly from the participants' responses (Gioia et al., 2013). This approach ensured that our analysis remained closely aligned with the lived experiences and perspectives of the participants, which was crucial for examining the social, customary, and cultural factors that influence consumers' perceptions of food-sharing activities. Furthermore, thematic analysis provided the necessary flexibility to capture the diverse range of responses and perspectives within our dataset. As we sought to understand the multifaceted nature of individuals' attitudes towards digital food-sharing platforms, thematic analysis enabled us to delve deeply into the nuances of participants' responses, uncovering both commonalities and differences across various themes. This method facilitated a comprehensive exploration of the complex and varied motivations, attitudes, and concerns of potential users, offering in-depth insights into the factors affecting the adoption of digital food-sharing platforms.

The collected interview data was meticulously organised and coded using NVivo software. Adhering to Braun and Clarke's (2006) stages of thematic analysis, the first step involved an active and repeated reading of the dataset to gain familiarity with the content. This thorough examination allowed researchers to generate new ideas and identify underlying patterns within the data. Following this, we identified potential patterns and created preliminary codes by highlighting notable features in the dataset. Once the project documents were set up in NVivo software (version 12), initial codes were developed by pinpointing distinct characteristics within the data and establishing connections between different segments. This process involved systematically categorising the data to uncover relationships and patterns that might not be immediately apparent. By organising the data in this manner, we could explore the complex interplay of themes and subthemes that surfaced from participants' responses. Table 10 demonstrates the implementation of these codes on a sample data segment, illustrating how the thematic analysis process was applied in practice.

The next stage of the analysis focuses on the development of themes. In this phase, the previously generated codes are reviewed and organised into potential themes, each representing broader concepts or ideas. Pertinent data extracts identified through coding are then collated under each theme, providing a coherent representation of participants' perspectives. Following this, we refine the identified themes and construct a thematic "map" of the analysis. This map helps to visualise the relationships between themes, ensuring that they are closely linked to the relevant data and distinctly differentiated from one another. Figure 14 displays thematic maps illustrating this stage of the analysis, showcasing the interconnectedness of various themes and sub-themes.

The refinement process involves an iterative review where themes are assessed for internal consistency and external distinctiveness. This ensures that each theme accurately represents the data it encapsulates while remaining distinct from other themes. During this process, themes may be merged, refined, or even discarded to ensure a robust and coherent thematic framework. Finally, the themes undergo a rigorous evaluation process within the context of the coded data excerpts to ensure their validity and relevance to the dataset. This involves examining the data extracts under each theme to confirm that they accurately reflect the participants' experiences and perspectives. This transformation of raw data into higher-level abstractions requires multiple iterations, enhancing the robustness and coherence of the thematic analysis.

Ensuring Discriminant Validity in Thematic Analysis

In this research, discriminant validity refers to the precision with which the identified themes and patterns differentiate distinct facets of participants' attitudes and perceptions towards digital food-sharing platforms. It underscores the importance of ensuring that the themes derived from thematic analysis represent unique dimensions of the research construct, free from redundancy or overlap. To maintain discriminant validity, meticulous attention was given to the coding process, ensuring that each code encapsulated a specific aspect of participants' responses.

The iterative nature of thematic analysis facilitated continuous refinement and validation of the themes, preventing thematic redundancy or duplication. This process involved multiple rounds of coding and recoding, during which initial themes were continuously reviewed and adjusted to ensure they remained distinct and accurately reflected the data. Each theme was scrutinised

to ensure it represented a unique concept, rather than a repetition of another theme. Additionally, member checking was employed to validate the themes with participants. This involved sharing the preliminary findings with a subset of participants to confirm that the identified themes accurately represented their experiences and perspectives. This feedback process not only bolstered the credibility and distinctiveness of the themes but also ensured that the analysis remained grounded in the participants' actual experiences. Through these methodological strategies, the research upheld discriminant validity, ensuring that the identified themes accurately captured diverse dimensions of participants' attitudes and perceptions towards food-sharing platforms.

Data extract (No.24)	**Coded for**	**First-order codes**
I think I once had diarrhea after eating a sushi magic box. I'm not sure if it was because some of the sushi had raw fish in it, but I didn't feel well afterward. After eating it, I started getting a stomachache and ended up having diarrhea for several days. So now, if I get food from restaurants, I try to eat it the same day I pick it up.	Food Poisoning from Unfresh Food	Unfresh Food Issues

Table 10. A Sample Data Extract with Applied Codes

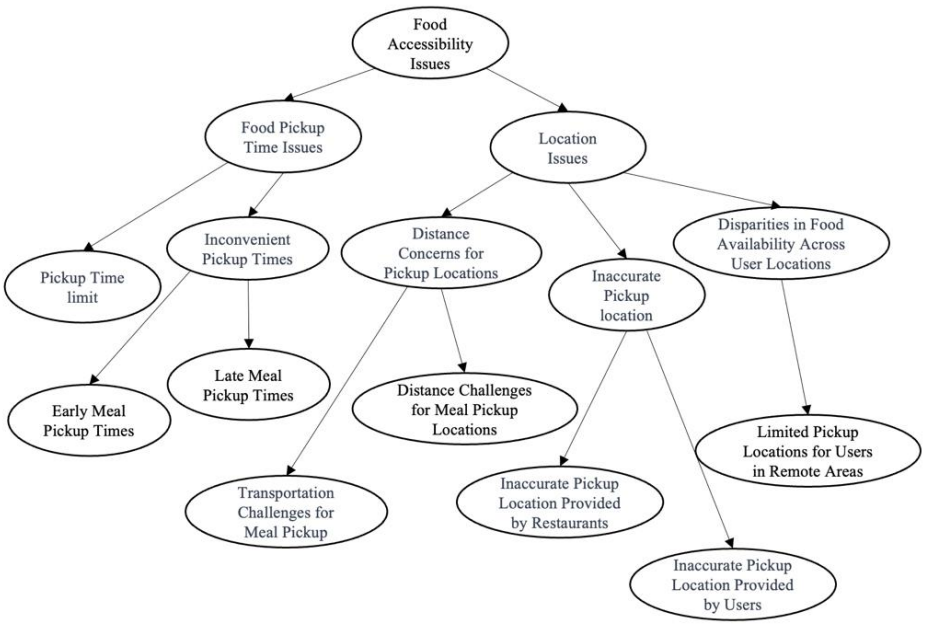

Figure 14. A Sample Thematic Map of Food Accessibility Issues

4.4 Findings and Discussion

This section introduces the findings of our research on the factors influencing consumer acceptance of food-sharing platforms, framed within the UTAUT2 framework. Our study identified eight major categories comprising 19 critical factors that significantly affect consumer adoption of these platforms.

The first category, Food Accessibility, encompasses concerns related to the time and location for picking up shared food. This aligns with Facilitating Conditions in the UTAUT2 framework, indicating that logistical convenience is crucial for user acceptance. The second category, Performance Expectancy, includes sustainable performance and food performance. Sustainable performance refers to the perceived benefits of food-sharing platforms in reducing food waste and alleviating food poverty, while food performance addresses practical issues such as unexpected food, discrepancies in food quantity and quality, and limited food variety and availability. These elements collectively influence users' expectations of the platform's effectiveness and reliability. The third category focuses on Ease of Use and Information Availability and Communication. Ease of use highlights the importance of simplicity and user-friendliness in encouraging platform adoption. Information availability and communication pertain to how well the platform provides necessary information and facilitates effective communication. These factors align with Effort Expectancy in the UTAUT2 framework, underscoring the need for a seamless user experience. The fourth category, Fun/Pleasure, centres on the enjoyment and satisfaction users derive from participating in food-sharing activities. This aligns with Hedonic Motivation in UTAUT2, suggesting that positive emotional experiences can drive user engagement. The fifth category, Economic Benefit, covers the financial advantages and cost savings experienced by users. This aligns with Price Value in UTAUT2, emphasising the role of economic incentives in technology acceptance. The sixth category, Social Influence, considers the impact of societal and peer pressure on user adoption, highlighting the importance of social dynamics and community support in influencing individual behaviour.

Beyond these categories, our study identified two additional factors that extend beyond the UTAUT2 framework. Risk Factors refer to users' concerns about safety, hygiene, and trust when engaging with food-sharing platforms, which can negatively influence their willingness to adopt or continue using these services. Emotional Factors encompass psychological

responses, such as anxiety or discomfort, that users experience during food-sharing interactions, potentially deterring their engagement with the platform. These classifications are elaborated upon below and succinctly summarised in Table 11 for clarity and reference, offering a thorough insight into the diverse factors affecting consumer acceptance of food-sharing platforms.

Table 11. The Key Findings - Factors Influencing Technology Acceptance

Examples of Direct Quotes	First-order Codes	Second-order Themes	Aggregate Factors	UTAUT2 Factors Comparison
"Some food shops have really limited pick-up times. For example, they might say you have to pick up your order between 5:00 and 5:15. If I take my time and walk leisurely for 15 minutes, I won't make it in time."	Pickup Time limit	Pickup Time	Food Accessibility	Facilitating Conditions
"Sometimes, the pick-up time might be as late as 9:00 or even 9:30. Some restaurants require you to pick up food between 9:30 and 10:00, which is pretty late."	Inconvenient Pickup Times			
"Another issue is the distance. I'd prefer to walk no more than 15 minutes to reach the pick-up location."	Distance Concerns	Pickup Location		
"I also have trouble locating the pick-up place on the map… it quite difficult to find."	Inaccurate Pickup location			
"If I don't live in town, I might not be able to use it… their partner restaurants are probably all concentrated there"	Disparities in Food Availability			
"I believe this app can definitely help reduce food waste…"	Reducing Food Waste	Reducing Food Waste and Food Poverty	Sustainable Performance	Performance Expectancy
"I can bring back enough food for my kids… they're excited about it."	Reducing Food Poverty			
"I went to a little corner shop once, and they gave me some food that wasn't really useful for me. I didn't know how to cook with it…"	Unusable Food	Unexpected Food	Food Performance	
"Every time I get food from the app, I find it hard to eat it all because the portions are too big and the food doesn't last long…"	Oversized Food Portions			
"The second time we ordered from the restaurant with the Magic Box, the portions were much smaller… I felt like I wasted my money…"	Inconsistent Food Portions from Same Restaurants	Discrepancies Food		
"…The amount of food you get from different restaurants can be totally different. Some places give you a lot of food for a great deal, while others just give you very small portions…"	Inconsistent Food Portions Across Restaurants			
"Cos there are only limited magic boxes available, we must compete with others to get them. My boyfriend and I even set our alarms to grab these foods sometimes..."	Limited Food Availability	Limited Food		
"…most of the food I've seen is just bread, all sorts of it, like toast, some croissants, and then a bit of veggies and fruits. It's pretty dull…"	Limited Food Variety			
"… I find this app (OLIO) really simple and easy to use…"	User-friendly	Application Usability	Ease of Use	Effort Expectancy
"I tried to give some feedback to a restaurant on the platform once because the food they provided was rotten, but unfortunately, I never received any response from them…"	Unresponsive Feedback	Feedback Response	Information Availability and Communication	
"So, he (food provider) messaged me back quite late, and I ended up waiting outside for over 20 minutes…"	Delayed Response	Communication Issues		
"One time on the platform, someone contacted me asking for food… I waited for about half an hour, and I thought it was a bit rude…"	No-show Recipient			

"I wasn't aware that the restaurant could cancel my order even after I had placed it… It was when I was on my way to pick up the food…"	Unaware of Cancellation			
"I feel that the information given by restaurants and food stores is not accurate… Sometimes it is said that there is still food, but when you go to collect the food, it is actually gone..."	Inaccurate Information			
"I was really curious to see what would be in the food box."	Investigating Curious	Fun/Playful	Fun/Pleasure	Hedonic motivation
"…picking food like this… is interesting"	Investigating Fun			
"You can get a ton of food for a really low price, like a bunch of sandwiches…"	Affordable Food Prices	Cost-effective	Economic Benefit	Price value
"Using this (OLIO)… helps us save money…"	Budget-friendly			
"At first, my daughter was the one using this (TGTG)…. She recommended us to use…"	Recommended by family members	Family and Friends Influence	Social Influence	Social Influence
"A friend of mine was using this app and recommended it to me. She said it would let me try many restaurants and save money…"	Recommended by friends			
"All my friends are using this app, so I want to give it a try…"	Popular among peers	Peer Influence		
"…it will be a little awkward when I take it (surplus food) from the shop…"	Awkwardness	Awkwardness	Negative Emotion	***(Emotional Factors)***
"…I don't like the feeling of going to the restaurant to get it (magic box), it's quite shy because you don't feel like you are a regular customer…"	Shyness	Shyness		
"… I have to pick up food at night, sometimes as late as 9:00 or even 9:30 (Restaurant pick-up requests), there may be some safety concerns."	Picking up Food at Night	Personal Safety Concerns	Personal Safety	***(Risk Factors)***
"…because I was alone and met someone I didn't know, and then he looked at me quickly and walked quickly to me, I was really scared.	Picking up Food from Strangers			
"..I remember one time I went to pick up some Afghan dessert from a restaurant located in a suburban area. The streetlights were very dim and there were no cars on the road, I felt a bit scared…"	Picking up Food in Unfamiliar Areas			
"I've got a gluten allergy, so I've got to be super careful. The platform says you can ask the restaurant about allergens, sometimes the staff doesn't even know what's in Food Box. They just pack it up without paying much attention to what goes inside…"	Food Allergy	Food Allergy	Food Safety	
"I bought a magic box that had sushi in it, and there might have unfresh raw fish in it. After eating it, I started getting a stomachache and ended up having diarrhea for several days…"	Food Poison	Unfresh Food		
"… like, I've been avoiding the fruits and veggies 'cause there's like many of them with rotten parts..."				
"I usually feel okay with packaged food from supermarkets, but I get a bit worried about food from small restaurants…"	Food Source Concern			
"…like fruits and veggies, may look fine from the outside, but they could be spoiled or have been stored for a long time…"	Food Storage concern	Improper storage		

4.4.1 Existing Technology Acceptance Factors

1. Facilitating Conditions

One of the primary factors influencing consumers' adoption of food-sharing platforms is the accessibility of food on these platforms (n=17). In the UTAUT2 framework, facilitating conditions refer to consumers' perception of an organisation having a sufficient technological foundation (Venkatesh et al., 2003). However, the impact of convenience on the acceptance of food-sharing platforms has received limited attention in the existing literature. Yamabe-Ledoux et al. (2023) explored food-sharing platforms in Japan and found that participation was primarily motivated by cost awareness and ease of use orientation. Similarly, Moltene and Orsato (2021) confirmed facilitating conditions as a driver of food-sharing platform acceptance, focusing on these conditions from the perspective of information technology.

Our research extends this understanding by demonstrating that, in the context of food redistribution, facilitating conditions encompass more than just the technical aspects of digital platforms. The food-sharing platform serves as an online surplus food trading market, with the digital support provided aimed at promoting food redistribution and enhancing the convenience of accessing surplus food for consumers. Therefore, in our data analysis, facilitating conditions include food accessibility supported by the digital platform. Higher food accessibility implies easier access to redistributed food, whereas lower accessibility requires more time and effort.

Interviewees (n=4) acknowledged that food-sharing platforms simplify the food redistribution process by linking food providers and demanders. However, certain constraints may limit the realisation of this ideal linking function. Our survey results indicate that food accessibility on these platforms primarily encompasses two aspects: food pickup time (n=9) and location issues (n=11). Food pickup time can significantly impact users' ability to retrieve redistributed food. Limited or inconvenient time slots can deter users who cannot fit these times into their schedules, while flexible and convenient pickup times can enhance user satisfaction and encourage continued use of the platform. Location issues also serve a significant function in the accessibility of food-sharing platforms. If the pickup locations are far or difficult to reach, users may find it challenging to participate, especially those without easy access to transportation. Conversely, strategically located pickup points can facilitate easier access and promote higher engagement. Further details regarding these factors are elaborated in the following sections.

1) Food Pickup Time

Inconvenient food pickup times refer to instances where food providers on food-sharing platforms require users to arrive at the pickup location within a specific time frame. Platforms such as Too Good To Go, which connect with restaurants, food stores, and consumers, often have limited pickup windows. Early or late time frames can impact consumers' enthusiasm for participation, as they may find it challenging to fit inconvenient pickup times into their schedules, negatively affecting their willingness to use the platform. Additionally, late pickup times can raise concerns about personal safety while traveling to collect the meal. In contrast, community-based platforms such as OLIO offer greater flexibility in meal pickup times.

... and there's one more thing I want to mention. You know, with Olio, you're actually connecting with people, so you can negotiate on the pick-up time that works for both of you. I even have a volunteer who provides food to me, and I usually go over to his place to pick it up. We've developed a system where I let him know what time I'll be there, and he leaves the food outside in his yard or something. So, when I get there, I can just grab it directly (No.10)

Consumers who use both OLIO and Too Good To Go food-sharing platforms express a clearer preference for OLIO due to the greater flexibility in arranging the time and place of meetings with food volunteers and other users, as indicated by interviewee No. 10. Therefore, inconvenient pickup times negatively influence consumers' willingness to use the platform, as highlighted by interviewee No. 3.

At times, the time may be 9:00 or even 9:30. Certain restaurants have a time requirement for picking up food, such as from 9:30 to 10:00, which is rather late (No.3).

The time constraints on food pickup are another significant factor influencing consumer use of food-sharing platforms. Merchants are free to set time limits for customers to collect food, which can be both helpful and challenging for consumers. While some consumers (n=2) believe that the time restrictions for collecting food from restaurants on platforms like TGTG help them plan their time and schedule efficiently, others (n=6) find the strict time limits make it difficult to obtain food smoothly. As noted by respondents No. 22 and No. 23, the overly strict time limits for picking up food can cause significant concerns. They worry that traffic congestion or other unexpected delays may prevent them from collecting the food at the specified time, leading to wasted food and resources, and thus increasing the overall environmental impact of

the platform. Furthermore, the limited time frames for pickup can make it difficult for consumers to participate in food-sharing programs, particularly if they have other commitments or obligations that interfere with the pick-up schedule.

… yeah, we made a little mistake earlier. With some of these food sharing platforms, the pick-up time for us can be pretty limited. Like, maybe they only give you a 10-minute window to collect your food, whereas other places might give you an hour, say from 9:00 to 10:00. So, when we found out that the pick-up time is between9:00 to 9:10. We were kind of rushing to make it on time （No.23）.

Then some food shops have very limited pick-up time. For example, they may specify 5:00 to 5:15. I reckon if I stroll at a leisurely pace for 15 minutes, I won't be able to pick it up in time （No.22）.

2) Location

Moreover, in addition to time constraints, location factors emerged as a more critical aspect of food accessibility (n=11). The interviews highlighted three categories of location-related factors that hinder the accessibility of food on sharing platforms. The first category is the distance concern for pickup locations, where the food provider or restaurant is too far away, making it inconvenient for users to collect food. The second category is inaccurate pickup locations, where the address provided by the food provider on the platform is incorrect or vague, leading to confusion and difficulties in locating the pickup point. The third category is disparities in food availability across user locations, where some users, particularly individuals residing in isolated regions, have limited access to food-sharing platforms, reducing their chances of obtaining food from these platforms.

In terms of distance concerns for pickup locations, the study found that the distance between a consumer and the restaurant or food provider can affect the accessibility of food. Several participants (n=7) emphasised the importance of proximity when it comes to picking up food. For instance, one consumer (No.10) stated that they only considered ordering food from locations within a 15-minute walking distance and would not opt for food beyond this range. A location that is too far away can significantly impact the convenience of using food-sharing platforms, as it increases the time and energy costs required for pickup and directly influences

consumers' willingness to use the platform, as noted by respondent No. 15.

I really don't like taking the bus, so if it's too far to walk, I won't go to get it. But if it's within walking distance, like 10 mins walk.....(No.15).

The accessibility of food is influenced by the user's location. Several interviewees (n=8) stated that their location has a significant impact on their ability to access food through these platforms. Respondents noted that the location where the platform is used plays a crucial role in shaping their overall experience, as highlighted by respondent No. 1. Several interviewees (n=6) mentioned that their location is highly convenient, as it is situated near the city centre, offering a wide range of food options on the sharing apps and nearby cooperative restaurants. Some interviewees (n=3) even indicated that the location of food on certain food-sharing apps is closer to them than the nearest supermarkets, making it incredibly convenient to use these platforms, as pointed out by interviewee No. 10. However, interviewee No. 17, who recently moved to a different location, expressed concerns about their continued use of the food-sharing platform, as there are very few restaurants and food stores nearby. This underscores the importance of location in determining the accessibility of food on these platforms.

...they are very close to me, some are even closer than the supermarket, I think it is very convenient (No.10).
...if you're in the country, you probably don't have much use for it. (No.1)

2. Performance Expectancy

Performance expectancy, a pivotal construct within the UTAUT2 framework, pertains to users' perceptions of a technology's potential to enhance productivity (Iyer et al., 2018; Tan et al., 2017; Ali et al., 2023). In the context of food redistribution, performance expectancy encompasses both Sustainable Performance and Food Performance.

Sustainable performance refers to consumers' belief in the efficacy of food-sharing platforms in facilitating redistributing surplus food to minimise food waste and address food poverty. This concept addresses the extent to which individuals perceive these platforms as effective mechanisms for mitigating food waste and food poverty. Our study aligns with Moltene and Orsato's (2021) research utilising the UTAUT2 framework, underscoring the significance of performance expectancy in influencing the acceptance of food-sharing technology. While their

research explored various aspects of performance expectancy, including perceived usefulness, perceived advantages, quality of service, variety, and lifestyle, our study focuses on the core function of food-sharing platforms: their efficacy in facilitating surplus food redistribution to minimise food waste and combat food poverty.

Food performance, another critical factor, pertains to the quality and usability of the redistributed food on food-sharing platforms, significantly influencing consumers' willingness to use such platforms. Our interview results suggest that many consumers (n=13) are satisfied with the quality of the food available on these platforms. However, this satisfaction does not necessarily indicate that the food quality is excellent; rather, it reflects the perception of good value due to discounted prices. As one interviewee (No.22) noted, *"... it's hard not to be satisfied when you think about the price.*" Thus, the judgement of food quality and appearance on food-sharing apps differs from that of food purchased initially.

Our interviews also revealed that consumers' expectations regarding the brand, manufacturer, and nutritional value of redistributed foods are not stringent requirements for food-sharing platforms. Instead, consumers' satisfaction standards for redistributed foods are often compared with those of regular food, focusing more on cost-effectiveness, freshness, and taste suitability. Consequently, few evaluations of food nutrition and deliciousness were made during the interviews. Consumers' evaluations of food centred on aspects such as cost-effectiveness, freshness, and whether it suited their taste preferences. Our findings indicate that issues related to food performance on food-sharing platforms include unexpected food items, discrepancies in food quantity and quality, and limited variety and portions of food offered. Further details regarding these factors are elaborated in the following sections.

1) Unexpected Food

One common issue that arises in the context of food-sharing platforms is the provision of unexpected food. This phenomenon often occurs when consumers opt for the "magic box" option on platforms such as Too Good To Go. Given the format of the magic box, consumers cannot predict what kind of food they will receive. While some consumers express excitement and interest in the mystery and novelty of the magic box format (n=4), others report discomfort with the lack of control and certainty it entails. In some cases, consumers may receive food items that do not align with their personal preferences or expectations, making them reluctant or unable to consume the food. As noted by Interviewee No. 1: *"I went to a little corner shop*

once and they gave me some food that wasn't really useful for me. I didn't know how to cook with it, so I had to waste it" (No. 1). This can lead to the unfortunate outcome of discarded food, which undermines the goal of food recycling.

Moreover, some users have expressed disappointment when they are unable to obtain their preferred menu items from higher-rated restaurants or cafes. Although the restaurant rating system provided by food-sharing platforms helps users identify and choose their preferred dining options, the system cannot fully account for personal taste preferences. As Interviewee No. 17 noted, users may become discouraged and discontinue use of the platform if they are unable to obtain their desired food items.

I was saying that I might only use it like three or four times because I didn't really find the feedback he gave me to be that great. Like, let's say there's a restaurant that has like 4 or 5 stars in the rating, and you'd think it should be good, right? But when I went there myself, the food wasn't what I was hoping for, and it just made me not want to use it as much (No.17).

2) Discrepancies in Food Quantity and Quality

One of the issues that emerged during the interviews was the discrepancy in food quantity and quality on food-sharing platforms, both within the same restaurant and across different establishments. Participants highlighted that when ordering food magic boxes from the same restaurant, there can be significant variation in portion sizes. For instance, Interviewee No. 26 noted that the quantity of food in the magic boxes can vary greatly, even when they are purchased at the same price.

The second time we ordered from the restaurant with the Magic Box, the portion size had significantly reduced to a much smaller size. I felt like I wasted my money (No.26).

Furthermore, some participants (n=5) noted differences between chain restaurants and independent offline restaurants in terms of portion sizes and food quality. In general, chain restaurants tend to offer more consistent portions and quality, while the experience at independent offline restaurants can be more varied. Although consumers (n=11) can use restaurant ratings to make basic judgments about food quality, it remains challenging to ensure they will receive high-quality and affordable food, even from highly rated restaurants. Additionally, Interviewee No. 19 highlighted that even within the same chain, there can be

significant differences in the quantity and variety of food offered by different restaurants or stores, leading to a perception of inconsistency in food quality. These issues can affect the perceived value and performance of food-sharing platforms, potentially reducing consumers' willingness to use them.

3) Limited Variety and Portions of Food Offered

Limited availability of food boxes is another issue that affects consumers' experience with food-sharing platforms. As indicated by some interviewees (n=5), the offerings on the Too Good To Go platform are often limited, leading to a situation where users must compete to purchase popular food boxes. This competition can result in frustration and disappointment, especially when users are unable to obtain their desired items. Furthermore, the limited availability requires significant time and effort from consumers, as they may need to constantly refresh the webpage or set alarms to order popular boxes (No.12). In some cases, consumers have to wait for restaurants to release new food boxes, which can be time-consuming and inconvenient. These factors can impact consumers' willingness to use the platform, especially when they perceive the effort required as disproportionate to the benefits obtained.

... I really love this restaurant I've been to, and they have these food magic boxes. The thing is the restaurant is super popular and the boxes sell out in like one or two minutes. So, my boyfriend and I set an alarm and keep refreshing the page until it's available. As soon as we see it, we buy it right away. It can be frustrating if we miss out on getting one (No.12).

This study also revealed that a few participants (n=6) perceived a limited variety of food on food-sharing platforms. Specifically, for users of OLIO, the majority of leftover foods from supermarkets were relatively restricted in terms of variety. Despite this limitation, consumers demonstrated a favourable attitude towards the limited food types available. This can be attributed to their understanding of the suboptimal nature of food offerings on food-sharing platforms, leading to an attitude of acceptance and understanding. Nevertheless, a small number of consumers (n=2) reported that excessive monotony in food offerings could lead to a loss of interest in the app, as the food became unappealing and repetitive.

Anyways, most of the food I've seen is just bread, all sorts of it, like toast, some croissants, and then a bit of veggies and fruits. It's pretty dull if you ask me (No.7).

The findings of the research suggest that a segment of the user base of the Too Good To Go platform faces challenges regarding their food options. Specifically, the limited number of participating restaurants or food stores in their vicinity results in a restricted selection of food types. Consequently, this group of individuals may experience a limited variety of food options, which could affect their overall satisfaction with the platform. For example, one of the study participants (No. 15) expressed dissatisfaction with the food offered through the Too Good To Go platform in their area, as it did not provide many choices. This experience led to infrequent use of the app, underscoring the importance of offering diverse food options to ensure user engagement and satisfaction.

3. Effort Expectancy

Effort expectancy in the UTAUT2 framework refers to users' expectations regarding the ease and simplicity of using a particular technology (Venkatesh et al., 2003; Ooi et al., 2021). According to Moltene and Orsato (2021), effort expectancy is a critical element affecting the continued use of food-sharing platforms. Additionally, Fuentes et al. (2021) examined the promotion of mobile apps in the food conservation sector and found that operational issues and discrepancies with existing practices could deter users' interest and patience, leading to the discontinuation of app usage. Building on existing research, our study further explores the concept of effort expectancy within the context of food redistribution practices on digital platforms. Effort expectancy encompasses both the ease of use and the availability of information and communication. Ease of use refers to how intuitive and user-friendly the platform is, including aspects such as navigation, interface design, and the simplicity of completing tasks. A platform that is easy to use reduces the cognitive load on users and encourages regular engagement.

Information availability and communication refer to how well the platform provides necessary information and facilitates interaction between users and providers. This includes clear instructions for food collection, real-time updates, and effective communication channels for resolving issues. When users can easily find and understand the information they need, and when they can communicate effectively with food providers, their overall experience improves. Food-sharing platforms serve as a promising solution to tackle the problem of food waste by connecting potential food surplus providers with food recipients through digital platform technology. While such platforms offer numerous advantages, the findings of this study suggest that users face several challenges related to information availability and communication during

the process of online interaction and offline food collection.

1) Lack of Feedback Response

Based on the findings, the lack of feedback response was also highlighted as a concern. Several interviewees (n=2) mentioned that they did not receive any response or acknowledgement from the food provider or the platform after reporting an issue or providing feedback about the food quality or service. This lack of communication can be discouraging for users and can result in a decline of trust in the platform and its services.

I tried to give some feedback to a restaurant on the platform once because the food they provided was rotten, but unfortunately, I never received any response from them (No.2).

2) Inaccurate Information

Inaccurate information was identified as a significant issue by the interviewees. They raised issues about the availability and precision of information provided on food-sharing platforms. Specifically, respondents highlighted that information related to food availability can be delayed or inaccurate, leading to a waste of time and energy, as noted by Interviewee No. 3. For instance, some interviewees (n=2) reported difficulties in locating the food provider due to inaccurate maps on platforms like OLIO. The inaccuracy of the positioning system on these platforms can hinder the smoothness of offline transactions, causing inconvenience for consumers. Therefore, the accuracy of information on food-sharing platforms is crucial to ensuring efficient and effective communication between potential food surplus providers and recipients.

I feel that the information given by restaurants and food stores is not accurate. Sometimes it is said that there is still food, but when you go to collect the food, it is actually gone (No.3)

3) Timeliness Issues in Communication

In addition to inaccurate information and lack of feedback response, timeliness issues in communication were also identified as a significant concern among platform users. Specifically, some interviewees (n=2) reported delays in receiving information or communication, which can be time-consuming and frustrating. For instance, users of the OLIO platform mentioned that they sometimes do not receive timely message replies when conducting offline transactions with other users, leading to extended waiting times outdoors (No. 22). Similarly, OLIO

volunteers encountered communication issues at supermarkets, where they would receive notifications from staff to collect food, only to find that the food had already been claimed by the time they arrived (No. 27). Such delays not only hinder the effective use of food-sharing platforms but also consume users' time and energy. Therefore, addressing timeliness issues in communication should be a priority for platform providers to enhance the user experience.

One time on the platform, someone contacted me and asked for food, but they never showed up. I waited for them for about half an hour, and I thought it was a bit unfriendly (No.22).

4. Hedonic Motivation

Hedonic motivation, characterised by intrinsic factors such as playfulness, enjoyment, fun, and pleasure (Iyer et al., 2018; Qin et al., 2023), plays a significant role in the context of food-sharing platforms. For instance, Hua et al. (2023) investigated a food-sharing platform in Thailand and discovered that perceived playfulness was a primary factor influencing consumers' purchase intentions toward surplus food. The enjoyment derived from purchasing surplus food through these platforms significantly impacts consumers' purchasing behaviour. Building on this foundation, our study delves deeper into the concept of hedonic motivation within the context of food-sharing platforms.

During interviews with participants, it was evident (n=8) that these platforms were perceived as creative and interesting, fostering gratification and entertainment for users. For example, one participant (Interviewee No. 17) expressed their interest, stating, "*I was really curious to see what would be in the food box.*" This highlights consumers' curiosity and desire to explore food-sharing platforms. Recognising the significance of hedonic motivation, our study underscores that when users have an intrinsic drive to engage with food-sharing technologies, they are more likely to derive satisfaction from their usage experience.

Hedonic motivation not only enhances user engagement but also contributes to the overall success of food-sharing platforms. When users find the experience enjoyable and entertaining, they are more inclined to return and continue using the platform. This repeated engagement fosters a loyal user base, which is crucial for the sustainability and growth of these platforms. Moreover, the element of fun and curiosity can lead to word-of-mouth promotion, as satisfied users are likely to share their positive experiences with others, thereby attracting new users.

5. Price Value

Price value, which refers to the financial benefits of adopting new technologies and systems, is a key differentiator that makes UTAUT2 more applicable to the consumer market than UTAUT (Venkatesh et al., 2003). Most redistributed food on food-sharing platforms is either free or offered at a low cost, making economic motivations a primary factor for users to engage with surplus food platforms (Amaral et al., 2023; Yamabe-Ledoux et al., 2023). For instance, Magno and Cassia (2024) highlight that economic motivations are crucial determinants and necessary conditions for continued usage. However, contrasting perspectives exist in the literature, such as those presented by Hua et al. (2023), who found that price consciousness did not influence purchase intentions in their study.

In this research, many participants (n=18) highlighted the financial advantages associated with food-sharing platforms as a significant attraction. For example, Interviewee No. 9 remarked, "*…buying food at OLIO is really good value. The bag I bought was only three pounds, but it contained seven or eight sandwiches..."* This finding aligns with other studies suggesting that economic benefits are strong motivators for food sharing, even as awareness of sustainability issues related to food waste grows.

Price value encompasses not only cost savings but also the perceived value for money. Consumers often evaluate the worth of the food received relative to the price paid, which in turn influences their satisfaction and likelihood of continued use. The affordability of food-sharing platforms makes them accessible to a broader demographic, encouraging more people to participate in reducing food waste. Additionally, the low cost can alleviate financial pressure on individuals and families, particularly in times of economic uncertainty.

Understanding the role of price value in consumer decision-making is crucial for the design and promotion of food-sharing platforms. While some studies indicate that economic incentives are primary drivers, others suggest that price consciousness may not always be a determining factor. However, the general consensus in this research indicates that the affordability of food-sharing platforms significantly influences user engagement and satisfaction. By emphasising the financial benefits, these platforms can attract a larger user base and promote sustainable food practices. Further exploration of price value can provide deeper insights into how economic factors drive the adoption and continued use of food-sharing platforms.

6. Social Influence

Social influence, as defined by Venkatesh et al. (2003), refers to the extent to which individuals perceive that important others expect them to adopt a specific technology. It encompasses the impact of one's social network on their views, attitudes, and behavioural intentions (Talukder et al., 2019). Schanes and Stagl (2019) found that half of the food-savers in their study became involved in food sharing through personal connections within food-sharing networks. They proposed that positive recommendations and conversational interactions with active members raise awareness and strongly encourage participation. This finding aligns with our study, where we observed a similar trend. In the context of food-sharing apps, social pressure from peers, family, and media significantly influences user adoption.

Many respondents (n=7) indicated their willingness to adopt these platforms if encouraged by their social circles. For instance, Respondent No. 6 mentioned, "*At first, my daughter was the one using this (TGTG)… She recommended us to use it.*" This highlights the influence of family on a consumer's usage intention. Similarly, Respondent No. 17 stated, "A friend of mine was using this app and recommended it to me. She said it would let me try many restaurants and save money," illustrating the influence of friends. This indicates that collective concepts and family consciousness motivate individuals to engage. Additionally, some consumers noted that they were influenced by the popular trends within their peer groups.

However, some respondents noted that if their close family members viewed food-sharing platforms negatively, it would also affect their willingness to engage with these platforms. This suggests that both positive and negative perceptions within one’s social circle can significantly impact the decision to adopt food-sharing technologies. Therefore, understanding the role of social influence is crucial for designing strategies to enhance the adoption and sustained use of food-sharing platforms. Creating positive buzz and leveraging social networks can effectively increase user engagement and participation.

4.4.2 Beyond Existing Theories

While our study confirms the applicability of the UTAUT2 framework in the context of emerging food-sharing platforms, we have identified additional critical factors that influence users' adoption decisions due to the unique attributes of this technology. The emphasis on food exchange, coupled with its strong sustainability dimension, adds complexity to the determinants of adoption. Although the UTAUT2 framework explains a significant proportion

of the variance in adoption and usage behaviours, it lacks indicators that focus on individual characteristics and user dispositions, which can play an influential role in shaping these behaviours (Dwivedi et al., 2019).

By incorporating insights from our interviews, this research extends the UTAUT2 model by introducing two additional constructs that reflect user dispositions: **Risk Factors** and **Emotional Factors**.

Risk Factors encompass users' concerns about safety, hygiene, and trust in the platform, which are particularly significant in the context of food-sharing. While the original UTAUT2 framework includes Facilitating Conditions, which account for organisational and technical support, Risk Factors go further by addressing perceived safety risks, a key determinant of whether users will adopt or continue using food-sharing platforms. The integration of Risk Factors enhances the explanatory power of UTAUT2 by acknowledging that even with adequate infrastructure, concerns about food safety may deter users from engaging with the platform. As such, Risk Factors serve as a direct negative predictor of both Behavioural Intention and Use Behaviour. This recognises that users' safety concerns are distinct from other factors like Perceived Usefulness or Effort Expectancy, and must be treated as a separate construct. By addressing these concerns, the revised model offers a more comprehensive explanation of adoption behaviour, particularly in contexts where perceived risk plays a central role, such as the sharing economy or food-related technologies. This contribution is significant as it highlights the importance of context-specific risks in shaping technology acceptance, making the UTAUT2 framework more versatile and applicable across various industries.

Emotional Factors refer to the psychological responses and feelings users experience when engaging with food-sharing platforms. These may include anxiety, discomfort, or embarrassment, which are often overlooked in traditional models of technology acceptance. While Hedonic Motivation in UTAUT2 addresses the pleasure or enjoyment derived from using a platform, Emotional Factors capture negative emotions that may discourage use. The inclusion of Emotional Factors as a negative predictor of Behavioural Intention extends the UTAUT2 framework by recognising that emotional responses—particularly negative ones—can significantly impact whether users adopt or continue to use a platform. In the context of food-sharing, where users may feel uncomfortable due to the stigma associated with receiving or donating food, these emotional concerns are especially relevant. This addition provides a

more nuanced understanding of user behaviour, particularly in situations where emotional reactions are linked to social identity or personal well-being.

The inclusion of Risk Factors and Emotional Factors enhances the UTAUT2 model's adaptability, making it more applicable to specific industries like food-sharing platforms, where safety and emotional concerns play a crucial role in user decision-making. Traditional UTAUT2 constructs, such as Performance Expectancy and Effort Expectancy, do not fully capture these industry-specific concerns, and by addressing this gap, the revised framework provides a more comprehensive tool for understanding technology adoption across diverse sectors. Furthermore, these new constructs improve the predictive power of the model. By recognising that both risk and emotional concerns can significantly influence user behaviour, the enhanced framework is better equipped to explain variations in Behavioural Intention and Use Behaviour, particularly in settings where trust, safety, and emotional responses are critical. This contributes to the broader literature on technology acceptance by highlighting that external and psychological factors are just as important as functional considerations in determining user engagement with technology. Finally, the revised framework underscores the importance of user-specific characteristics in shaping technology adoption. While the original UTAUT2 model already accounts for moderators such as age, gender, and experience, the inclusion of Risk Factors and Emotional Factors introduces a new layer of complexity, showing how individual concerns related to safety and emotions can vary based on the context of use. For instance, older users may be more sensitive to Risk Factors, while younger users may be more influenced by Emotional Factors. This provides richer insights into how different user groups interact with technology, enhancing the model’s applicability across various contexts.

1. Risk Factors

1) Food Safety Issues

The results of the interviews conducted in this study demonstrate that consumers' concerns about food safety play a crucial role in shaping their willingness to engage with food recycling platforms. Several issues emerged as significant factors affecting consumer behaviour, including concerns about food allergies, freshness, storage practices, and food origin.

2) Food Allergy

Two interviewees pointed out during the interviews that they faced challenges when buying redistributed food on food recycling platforms due to their food allergies. For instance,

Interviewee No.9, who used Too Good To Go, reported that the types of magic food boxes they could choose from were severely limited due to their food allergies. Moreover, in addition to the limited food options, a significant hidden danger was the lack of allergy information labeling on the food items available on food sharing platforms. Interviewee No.21 noted that although the Too Good To Go platform provides consumers with the option to ask the store clerk for allergen information, some store clerks were not aware of the specific foods and allergen information present in the blind box. This lack of allergen information hinders the purchasing decision of some consumers and may also discourage potential consumers from using food sharing platforms, ultimately impacting their effectiveness in reducing food waste.

I've got a gluten allergy, so I've got to be super careful. The platform says you can ask the restaurant about allergens, sometimes the staff doesn't even know what's in the Magic Box. They just pack it up without paying much attention to what goes inside (No.21).

3) Unfresh Food

Two interviewees highlighted challenges related to food allergies when purchasing redistributed food on food recycling platforms. For instance, Interviewee No. 9, who used Too Good To Go, reported that the selection of magic food boxes was severely limited due to their food allergies. Moreover, beyond the limited options, a significant hidden danger was the lack of allergy information labelling on the food items available on food-sharing platforms. Interviewee No. 21 noted that while the Too Good To Go platform allows consumers to ask store clerks for allergen information, some clerks were unaware of the specific foods and allergens present in the blind box. This lack of allergen information hinders the purchasing decisions of some consumers and may discourage potential users from engaging with food-sharing platforms, ultimately affecting their effectiveness in reducing food waste.

I bought a magic box that had sushi in it, and there might have unfresh raw fish in it. After eating it, I started getting a stomachache and ended up having diarrhea for several days (No.6).

...I've been avoiding the fruits and veggies 'cause there's like many of them with rotten parts (No.14).

4) Food Storage

Based on the interview results, concerns regarding the storage of redistributed food emerged as a common theme among respondents. Specifically, they expressed concerns about the unknown storage duration and methods used for the food. A few interviewees (n=2) also indicated that they find it challenging to trust the storage conditions and duration of food obtained through OLIO from individuals, in contrast to food from restaurants and food stores available on Too Good To Go. Interviewees noted that leftover food obtained from individuals may not have been stored in a clean and hygienic environment, raising concerns about food safety, as highlighted by Interviewee No. 22. The lack of clarity regarding the storage duration and conditions of redistributed food impacts consumers' perception of its safety and quality. As a result, consumers expressed a preference for obtaining food from more trustworthy sources, such as restaurants and food stores, which adhere to strict food safety guidelines. These concerns have significant implications for food-sharing platforms as they work to build trust and confidence among their users.

If the food provided on OLIO comes from individual users, I will not take it. I only want the food provided by the supermarket. Because I don't know how individual users store food or how long they store it (No.22)

5) Personal Safety Issues

This study also investigated concerns regarding personal safety when using food-sharing platforms. The findings reveal that respondents (n=7) expressed apprehension about picking up meals at night, particularly in unfamiliar areas. Respondents also highlighted concerns about the time requirements of some restaurants and OLIO food volunteers, which necessitate meal pickups at later hours, raising worries about personal safety, as noted by Interviewee No. 7.

I think if I have to pick up food at night, sometimes as late as 9:00 or even 9:30 (Restaurant pick-up requests), there may be some safety concerns (No.7).

Furthermore, OLIO users provided feedback about the remoteness of food providers' residences and delays in replies from transaction partners, which heightened concerns about personal safety. Some respondents (n=3) stated that they would discontinue using the OLIO platform if they encountered a situation that compromised their safety. In contrast, TGTG users typically obtain food through offline physical stores, and thus, concerns about personal safety

are minimal.

...because I was alone and met someone I didn't know, and then he looked at me quickly and walked quickly to me, I was really scared (No.2).

...although it was only four or five o'clock at that time, it was very dark, and I remember it seemed to be a little rainy. Then maybe because it was a residential area or something, you would go further and further, and there was no one there. I was really scared, and I couldn't find him at that time. And then, after I finally arrived that location, and I sent him messages, but he didn't replied. So I stood there for more than twenty minutes before he replied to my message. At that time, I was really scared. I felt that I would never dare to use this app again. (No. 10)

Moreover, some respondents (e.g., No. 15) reported avoiding face-to-face contact with offline food traders when using the OLIO platform. As food providers, they would place the food in a designated location and notify the recipient to collect it from there, thereby minimising personal safety concerns.

I usually ask people to leave it outside when I go to get it. I also make an appointment for others, and then I put it outside in advance. We basically don't need to see anyone. (no.15)

2. Emotion Concern

Based on the interview findings, a small number of respondents (n=3) reported experiencing negative emotions such as awkwardness and shyness when collecting food from cooperative restaurants on food-sharing platforms or from platform volunteers. The interviewees attributed these emotions to the perceived difference between the low-priced food Magic boxes they received and the regular-priced food bought by other restaurant customers. This sense of being different from other customers can create discomfort for food-sharing platform users. However, two respondents noted that these negative emotions gradually subsided with continued use of the food recycling platform.

I don't like the feeling of going to the restaurant to get a magic box, it's quite shy because you don't feel like you are a regular customer (No.25).

It is noteworthy that, compared to traditional food banks and non-governmental charitable organisations, food-sharing platforms have the potential to redistribute food to a larger number of consumers. Additionally, the symbolic meaning of reducing food waste and environmental pollution associated with food-sharing platforms may significantly alleviate the negative emotions that can arise from traditional methods of food distribution.

Factors Influencing Continuous Usage Intention

Participants also expressed several factors influencing their continuous usage intention of food sharing platforms. These factors include Food Performance, Fun/Pleasure, Economic Benefit, Social Influence, and Food Safety, each playing a crucial role in sustaining engagement.

Food Performance refers to the quality, quantity, and consistency of food items provided through the platforms. High food performance ensures that users receive satisfactory and reliable food portions, enhancing their overall experience. For instance, one interviewee (No.26) mentioned, "*The second time we ordered from the restaurant with the Magic Box, the portions were much smaller… I felt like I wasted my money*." This highlights the importance of consistent food portions in maintaining user trust. When consumers cannot consistently receive adequate food portions, their trust in the platform diminishes, negatively impacting their intention to continue using the service. Conversely, when users consistently receive good quality and appropriately portioned food, their trust in the platform strengthens, making them tend to keep using the service. This reliability in food performance is crucial for sustaining user engagement and fostering long-term loyalty to the platform.

Fun/Pleasure, as part of Hedonic Motivation, significantly impacts sustained engagement. Users derive enjoyment and satisfaction from the novelty, creativity, and sustainability of the platforms. This sense of fun and pleasure fosters a positive emotional connection, encouraging users to return to the platform frequently. An interviewee (No.15) noted, "*Using the app is fun and it feels good to know I'm helping reduce waste.*" This positive emotional experience motivates users to continue using the platforms. When the experience is enjoyable, users are more prone to remain loyal and interact with the platform over the long term. Furthermore, the interactive and innovative features of food sharing platforms can enhance the overall user experience. For example, another interviewee (No.4) shared, "*I love discovering new types of food and meeting people through the app...*" By providing an engaging and enjoyable experience, food sharing platforms can foster a sense of belonging and shared purpose among

users, further reinforcing their commitment and sustained engagement.

Economic Benefit is another critical factor. The financial savings and cost-effectiveness of using food sharing platforms are strong incentives for continuous usage. The ability to access affordable or free food items can alleviate financial pressure, making the platforms attractive for regular use. As one participant (No.18) highlighted, "*I save a lot of money using this platform... I will keep using it.*" When users perceive significant economic benefits, they are motivated to integrate the platform into their routine. Additionally, the economic benefit extends beyond individual savings. Some users appreciate the broader economic impact, such as supporting local businesses and reducing food waste, which aligns with their values of sustainability and community support. This dual benefit of personal financial savings and positive social impact further enhances the attractiveness of food sharing platforms, encouraging users to remain engaged and committed over the long term.

Social Influence encompasses recommendations and encouragement from family, friends, and peers, which significantly impact continuous usage intention. The support and participation of close social circles create a sense of community and shared purpose. An interviewee shared, "*My friends use it and encouraged me to join. Now, we all share tips and experiences, which makes it more engaging."* When users see their social network engaging with the platform, they are more likely to use it themselves, driven by social dynamics and the desire to be part of a collective effort. After joining the food sharing community, the same commitment and social influence continue to encourage them to keep using the platforms. This ongoing support helps reinforce positive behaviour and sustained engagement. Thus, the influence of social networks not only initiates user engagement but also sustains it by fostering a shared sense of responsibility and enjoyment.

Food Safety is a critical concern for users, significantly influencing their trust and willingness to continue using the platform. Ensuring that the food provided is safe, hygienic, and free from health risks is essential for maintaining user satisfaction. An interviewee (No.9) expressed, *"I stopped using it after receiving a stale meal once…"* This underscores the importance of consistently addressing food safety issues to prevent negative experiences and reassure users that the platform is reliable. When users feel confident about the safety of the food, they are more likely to remain engaged with the platform. Consistently providing safe and high-quality food helps build and maintain trust, which is crucial for long-term user retention. This

confidence in food safety encourages users to continue their engagement, fostering a loyal and trusting user base.

These factors will be further explored in Study 2 to gain deeper insights into their impact on sustained engagement with food-sharing platforms. A more detailed understanding of these influences will aid in developing strategies to enhance user retention, improve user experience, and promote the long-term success of these initiatives. By examining specific aspects such as Food Performance, Fun/Pleasure, Economic Benefit, Social Influence, and Food Safety, we aim to identify the key drivers and barriers to continuous usage. This comprehensive understanding will facilitate the design of more effective interventions and improvements, ensuring that food-sharing platforms remain attractive and reliable options for users.

4.5 Conclusion

As digital food-sharing platforms continue to grow in popularity, it is essential to explore the key factors influencing user acceptance and ongoing usage. This study validates the application of existing technology acceptance models within the novel context of food-sharing platforms and extends our understanding by introducing additional factors relevant to this unique setting. Our findings offer a thorough insight into the factors driving consumer adoption and usage of food-sharing platforms, framed within the UTAUT2 model. Eight key categories emerged, encompassing 19 critical factors, including Food Accessibility, Performance Expectancy, Ease of Use, Information Availability and Communication, Fun/Pleasure, Economic Benefit, and Social Influence. However, beyond the original UTAUT2 constructs, two crucial factors—Risk Factors and Emotional Factors—were identified as essential in shaping consumer behaviour.

Risk Factors, particularly regarding personal and food safety, were found to be significant barriers to adoption, emphasising the importance of trust in both the platform and the food-sharing process. In an environment where users often engage in face-to-face exchanges, concerns about hygiene and the safety of interactions can deter participation. Addressing these risks is therefore critical to achieving broader acceptance and ensuring the sustained use of food-sharing platforms. Similarly, Emotional Factors, such as feelings of awkwardness, shyness, and even shame, play a key role in user intentions. While positive emotions, such as joy and satisfaction, encourage adoption, the presence of negative emotions may inhibit usage, particularly in situations where social stigma or discomfort arises during the food-sharing process. Understanding and mitigating these emotional barriers is vital for enhancing user

engagement.

By incorporating Risk Factors and Emotional Factors into the UTAUT2 framework, our study provides a more nuanced and context-specific insight into the factors affecting the adoption and long-term use of food-sharing platforms. These insights highlight the importance of addressing both the practical risks and emotional experiences associated with food-sharing to foster greater trust and broader engagement with these platforms.

1. Theoretical Contributions

This study makes several key contributions to the theoretical landscape of technology acceptance, particularly in the context of digital food-sharing platforms. First, it extends the UTAUT2 model by identifying and incorporating two additional constructs: Risk Factors and Emotional Factors, which are uniquely relevant to the food-sharing context. These additions broaden the scope of the UTAUT2 model, enabling it to better capture the complexities of technology adoption in socially-driven environments, where issues of safety and emotional engagement are paramount. The inclusion of these factors demonstrates that, beyond the functional aspects of technology use, socio-cultural concerns such as personal safety and emotional responses must be considered to fully understand user behaviour.

Second, the study offers a more nuanced understanding of how both positive and negative Emotional Factors influence technology adoption. While traditional models, including UTAUT2, primarily focus on functional attributes such as Ease of Use and Performance Expectancy, this research highlights the critical role of emotional experiences, including feelings of joy, satisfaction, and anxiety, in shaping user intentions. The inclusion of Emotional Factors expands the UTAUT2 framework by recognising that emotional responses are not merely peripheral but central to the decision-making process, particularly in platforms like food-sharing, where users may experience discomfort or social stigma. This integration moves beyond the original Hedonic Motivation construct in UTAUT2 by recognising that negative emotional experiences, such as feelings of awkwardness or safety concerns, can act as significant deterrents to adoption. Our findings show that positive emotions, such as a sense of achievement and enjoyment, foster user engagement and loyalty. Many users (n=9) expressed that the modern, creative, and sustainable nature of these platforms contributes to their sense of gratification and entertainment, driving continuous use. Moreover, participants (n=3) reported that using food-sharing platforms provides a sense of fulfilment, as they feel they are

contributing to sustainability and helping those in need. This emotional satisfaction fuels Hedonic Motivation, a key factor in prolonged technology usage, and extends the UTAUT2 framework by illustrating how emotional satisfaction with the platform's moral and social impact can strengthen user engagement.

Third, this research contributes to the growing literature on sustainable consumption and social innovation by positioning food-sharing platforms not just as technological tools but as socially embedded systems that challenge conventional consumer behaviour. By integrating Risk Factors and Emotional Factors into the UTAUT2 framework, this study emphasises how moral and social principles—such as sustainability, social justice, and community engagement—interact with technology adoption processes. This alignment with values such as environmental sustainability and solidarity is particularly salient among participants who identify with the mission of reducing food waste and promoting shared consumption. Many participants valued the community aspect and the exchange of ideas and knowledge about food, which further motivated their participation. This intersection of technology acceptance and social impact theories expands the theoretical foundation for future research on socially-driven digital innovations, providing deeper insights into how platforms operating with a moral and ethical mission can influence user adoption and behaviour.

Finally, by integrating Risk Factors and Emotional Factors into the UTAUT2 model, this research contributes to the model's theoretical refinement and contextual adaptability. These two factors enhance the model's ability to predict user behaviour in specific environments, such as food-sharing, where concerns about personal safety, trust, and emotional engagement are integral to the user experience. This expanded framework provides a more comprehensive understanding of how external risks and internal emotions influence adoption, thus offering a richer theoretical model for examining technology acceptance in various industries that prioritise social interaction and community trust.

2. Practical Implications

The practical implications of this study are equally compelling, providing actionable insights for the development and management of food-sharing platforms. First, the study highlights the critical importance of logistical convenience, particularly in the design of food pickup times and locations. By optimising these logistical elements, platform providers can significantly enhance user engagement and reduce barriers to adoption. This finding underscores the need

for flexible and user-centric logistical solutions that accommodate the diverse needs of platform users.

Second, the research emphasises the importance of maintaining high standards of food quality and safety to build and sustain user trust. The study reveals that concerns about personal and food safety are significant deterrents to platform adoption, suggesting that providers must prioritise transparent and stringent safety protocols. Implementing clear safety guidelines and communicating them effectively to users can mitigate these concerns and encourage wider platform participation.

Third, the study offers insights into the role of social influence in driving platform adoption. Engagement with food-sharing platforms is significantly shaped by the social environment, including the opinions and participation of important individuals. Social influence emerged as a crucial factor, with recommendations and pressures from family, friends, and peers playing a pivotal role in user adoption. Encouragement from close social circles can strongly motivate individuals to engage with food-sharing platforms. This underscores the importance of social dynamics and community support in shaping individual behaviour, emphasising how social interactions and the collective endorsement of trusted individuals can drive users to adopt and continue using these platforms. Social influence is particularly important in fostering a sense of belonging and shared purpose, which can further enhance user engagement and loyalty. Recommendations from close social circles, such as family and friends, can greatly impact an individual's decision to engage with food-sharing platforms. Platform managers should leverage this social dynamic by fostering community engagement and encouraging users to share their positive experiences with others. By creating a strong sense of community and belonging, platforms can enhance user retention and encourage ongoing participation, thereby contributing to their long-term sustainability and success.

3. Limitations and Future Research

Although this study offers important insights, it is not without its limitations. The research primarily focuses on the user perspective, and further exploration of platform providers' strategies and challenges could offer a broader perspective of the ecosystem. Future research should also address the identified safety concerns and negative emotions in greater depth, exploring strategies to mitigate these issues to enhance consumer trust and platform engagement. Longitudinal studies examining the long-term effects of the identified factors on

user behaviour would be particularly beneficial in understanding the sustainability of food-sharing platforms. By tackling these limitations, future research can support the advancement of more effective food-sharing platforms that not only promote sustainable consumption but also ensure user safety and satisfaction.

Chapter 5. Study 2: Technology Continue Usage of Food Sharing Platforms

5.1 Introduction

The emergence of digital sharing platforms has revolutionised various aspects of consumer behaviour, particularly in the realm of food redistribution and waste minimisation. These platforms facilitate the redistribution of surplus food, aiming to mitigate food waste and promote sustainability. Despite their growing popularity, the factors influencing users' continuous engagement with these platforms remain underexplored. This the research aims to address this gap by exploring the determinants of continuous usage intentions of food-sharing platforms, focusing on perceived value and perceived risk. By drawing on established theories in service marketing and information systems (IS) literature, this study seeks to provide a comprehensive understanding of how different dimensions of perceived value and perceived risk impact user satisfaction and their desire to maintain usage of food-sharing platforms.

Perceived value, a concept that has evolved significantly since its introduction, plays an essential role in consumer decision-making. It encompasses various dimensions that reflect both the functional and experiential benefits that consumers derive from a service or product. This study builds on existing literature by examining price value, performance value, social value, esteem value, and enjoyment value within the context of food-sharing platforms. These dimensions capture the multifaceted nature of perceived value, highlighting the importance of both tangible and intangible benefits in shaping consumer perceptions and behaviours.

Perceived risk, another critical determinant of consumer behaviour, refers to the potential negative outcomes that consumers associate with using a service or product. In the context of food-sharing platforms, perceived risk includes concerns about food safety, privacy, and reliability. Understanding these risks is essential for addressing barriers to user engagement and ensuring the long-term success of these platforms. By integrating perceived risk into the analysis, this research aims to provide a holistic view of the factors influencing user satisfaction and continuous usage intentions.

Research on IS continuous usage has extensively examined factors that influence users' long-term engagement with technology and digital platforms. This study aligns with the existing body of IS continuous usage research by incorporating user satisfaction as a critical determinant

of continued engagement. Furthermore, it expands this framework by adding perceived value, which enhances user satisfaction and, in turn, fosters continuous usage intentions. By extending these concepts to the context of food-sharing platforms, this research provides a nuanced understanding of user retention in the digital sharing economy. The study confirmed that price value, performance value, social value, and enjoyment value significantly enhance the overall perceived value of food-sharing platforms. Contrary to expectations, esteem value did not show a significant positive relationship with perceived value, suggesting that users prioritise social image and practical benefits over personal esteem when using food-sharing platforms. Additionally, perceived risk did not significantly deter satisfaction or continuous usage intentions, indicating that users may be more tolerant of risks associated with redistributed food, especially when motivated by sustainability and cost savings.

This research adds to the body of work on perceived value and perceived risk by validating the roles of various value dimensions and challenging conventional beliefs about the negative impact of perceived risk. It also extends continuous usage research in the IS area by integrating perceived value into the framework, providing a nuanced understanding of user retention in digital sharing platforms. The findings offer valuable insights for practitioners, highlighting strategies to enhance user satisfaction and foster continuous engagement with food-sharing apps. By tackling these research gaps, this study aims to improve the theoretical understanding of consumer behaviour within the realm of digital sharing platforms and offer practical recommendations for fostering user engagement and sustainability within the sharing economy.

The remainder of this research is organised as follows. The following section reviews the relevant literature, providing a detailed examination of the conceptual foundations and key constructs used in this study. Following this, the methodology section outlines the research design, data collection methods, and analytical techniques employed. The results section showcases the findings from the data analysis, including hypothesis testing and model assessment. The discussion section interprets the results, linking them back to the research questions and theoretical framework. Finally, the conclusion summarises the main findings, examines the theoretical and practical implications, recognises the study's limitations, and proposes paths for further investigation.

This chapter presents the quantitative study, examining the factors influencing users' continuous engagement with food-sharing platforms. Using statistical analysis, it validates the

relationships between perceived value, risk, and long-term user behaviour. The empirical findings from Chapter 5 contribute to the development of the evaluation framework in Chapter 6, providing data-driven insights into how platforms can enhance user retention and sustainability.

5.2 Background

5.2.1 Perceived Value

The notion of perceived value has been integral to service marketing since its emergence in the early 1980s. Initially defined and extended through anecdotal research, service marketing evolved to focus on relational exchanges, where transactions between parties involve an exchange of value (Holbrook, 1999; Kotler, 2003This transition from a product-focused to a service-oriented perspective represented a major advancement in marketing theory and practice, emphasising the importance of interactions and relationships in creating value. This relational approach highlighted perceived value as a critical measure for achieving a competitive advantage and an essential element in strategic management (Parasuraman, 1997; LeBlanc and Nguyen, 2001).

The notion of perceived value has not only maintained its relevance but has also expanded in scope and complexity. Research on perceived value has since taken an interdisciplinary approach, integrating insights from psychology, sociology, economics, and business theories. This broadening of perspective has enriched the understanding of perceived value, making it a multifaceted construct that captures various dimensions of consumer experience and decision-making. Notable contributions to this field include Rokeach's value survey (1967), which provided a comprehensive framework for understanding human values, Kahle's list of values (1996), which identified core values influencing consumer behaviour, and Schwartz's value survey (1992), which offered a universal structure for comparing values across cultures. These foundational studies distinguish between "values" (the standards or norms guiding behaviour) and "value" (the preferential judgment of transactions), thereby providing deeper understanding of the elements that affect consumer perceptions and behaviours in the service context.

In the academic discourse, the concept of perceived value is often delineated ambiguously. Boksberger et al. (2011) addressed two primary perspectives of perceived value in their literature review. The utilitarian perspective is rooted in a psychological concept that captures

the common belief that any rise in wealth, regardless of magnitude, will invariably lead to a rise in usefulness, inversely proportional to the amount of goods already owned (Bernoulli, 1967). Within this framework, the utility of a service is evaluated as an individual's subjective valuation of money, especially under conditions of risk and ambiguity. Expected utility theory (von Neumann and Morgenstern, 1944) asserts that price represents the worth of a service, leading consumers to allocate their income in a manner that maximises the perceived 'value' obtained from services. Consequently, the utilitarian viewpoint defines perceived value as the equilibrium between the benefits received from using a service and the costs involved in acquiring and utilising it (Ostrom and Iacobucci, 1995). However, evaluating perceived value based solely on "price" oversimplifies its complicated and diverse nature. While price is an important component, it is intricately linked with benefits and sacrifices, making it an incomplete measure on its own.

In contrast, the behavioural viewpoint on perceived value provides a more comprehensive and in-depth explanation than the utilitarian focus on benefits and sacrifices. Drawing on social exchange theory, the behavioural perspective emphasises reciprocal exchanges or social interactions. These interactions are viewed as exchanges of actions and benefits/expenses, with consumers justifying their actions based on the perceived benefits and sacrifices (Homans, 1961). Consequently, perceived value is frequently characterised as 'a ratio or trade-off of total benefits received to total sacrifices' (Patterson and Spreng, 1997). Similarly, as Zeithaml (1988) noted, value reflects the customer's overall evaluation of the utility of a product, determined by perceptions of what is obtained relative to what is provided. Following Zeithaml's definition, this study interprets perceived value as individuals' general evaluation of the utility of food-sharing platforms, contingent on their perceptions of what is "given" and what is "received."

Zeithaml (1998) developed a goal-oriented model that illustrates the interactions among perceived quality, perceived value, and decision-making behaviours (see Figure 13). In this model, the perception of quality enhances customers' perceived value, which in turn positively influences purchase intention, highlighting the mediating role of perceived value in the connection between service quality and consumer behaviour. Similarly, within the framework of food-sharing platforms, users' intention to reuse is significantly influenced by the assessed value of the service. Moreover, perceived value is viewed as both a key precursor to customer satisfaction and a direct outcome of various dimensions of customer perception of service quality.

Perceived Risk

The concept of perceived risk, first introduced by Bauer (1967), describes the potential negative outcomes that consumers anticipate when considering a product or service. Perceived risk significantly influences consumer behaviour by affecting both the perceived value of a product or service and the willingness to make a purchase. According to Garretson and Clow (1999), a high sense of risk during the buying process directly diminishes the likelihood of purchase. Moreover, perceived risk indirectly affects purchase intentions by influencing perceived value (Chang and Tseng, 2013). Bauer's pioneering work laid the foundation for later studies by scholars such as Jacoby and Kaplan (1972), who identified various dimensions of perceived risk. This complex construct includes different types of risk: financial, privacy, physical, performance, social, time, and psychological (Martins et al., 2014). Financial risk involves the possibility of monetary loss, while privacy risk concerns the protection of personal information. Physical risk pertains to potential bodily harm, and performance risk involves doubts about whether a product or service will meet expectations. Social risk is the fear of negative evaluation by others, time risk involves the potential loss of time, and psychological risk includes the stress and anxiety related to the purchasing decision. Research has shown a negative correlation between perceived sacrifice and perceived value; when perceived sacrifice surpasses the customer’s acceptable level, perceived value decreases, reducing the likelihood of purchase (Chung and Koo, 2015; Gupta and Kim, 2010; Zeithaml, 1988).

Perceived Value and Perceived Risk in Digital Platforms

Within the realm of digital platforms, perceived value plays a pivotal role in shaping user behaviour and decision-making. Numerous studies have consistently shown that perceived value positively influences consumers' attitudes and behaviours within digital environments. For example, Kim et al. (2007) found that perceived value is crucial for consumers' acceptance of mobile internet (M-internet). Similarly, Sweeney and Soutar (2001) demonstrated that consumers' perceived value impacts their purchase intentions and behaviours by assessing product value. Additionally, Gordon et al. (2018) confirmed that perceived value is a significant indicator of individuals' behavioural outcomes in social marketing. Chiu (2014) suggested that both utilitarian value, which relates to the practical benefits of a product, and hedonic value, which pertains to the pleasure and enjoyment derived from a product, significantly influence individuals' repeat purchase intentions in online settings. Moreover, Shaw and Sergueeva (2019) identified that perceived value positively affects consumers' intentions in mobile commerce.

In digital platforms, both perceived value and perceived risk play critical roles in influencing user behaviour and decision-making. For instance, Featherman and Pavlou (2003) highlighted perceived risk as a substantial obstacle to the implementation of e-services, underscoring the importance of addressing these concerns to boost user engagement. Strategies to mitigate perceived risk, such as offering guarantees, ensuring clear communication, and fostering trust, are vital for the success of digital platforms (Gefen, 2000).

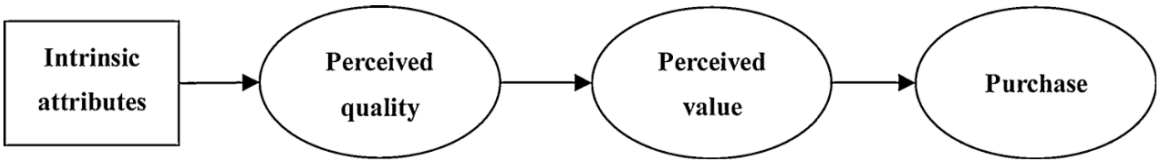

Figure 15. A Means-end Model Relating Price, Quality, and Value. **Source:** Zeithaml (1988)

5.2.2 Continuous Usage Research

Over the last ten years, the Expectation Confirmation Model (ECM) has garnered significant attention from Information Systems (IS) researchers studying post-acceptance behaviour. The ECM, derived from the Expectation-Confirmation Theory (ECT), posits that expectations and perceived performance contribute regarding post-purchase satisfaction, which, in turn, influences repurchase intentions. This influence is determined by the positive or negative divergence between anticipated outcomes and actual performance (Oliver, 2006). The decision to continue using an IS the consumer's decision to repurchase, as both are affected by initial usage experiences. Bhattacherjee (2001) updated and broadened the expectation-confirmation theory by incorporating perceived usefulness from the Technology Acceptance Model (TAM) alongside user satisfaction to forecast IS continuance intention (Figure 16).This integration suggests that users continuously update their expectations regarding an IS or product as they gain more experience with it, forming post-adoption anticipations regarding perceived usefulness (Thong et al., 2006). In contrast to pre-adoption expectations, the ECM suggests that perceived usefulness is a key factor influencing a user's satisfaction level with an information system or product. Perceived usefulness is described as 'the user's assessment of the anticipated benefits of using an information system (IS),' while confirmation is defined as 'the user's perception of the alignment between expectations of IS use and its actual performance.' Both perceived usefulness and confirmation affect user satisfaction, which is characterised as 'an ex-post evaluation of the user's first encounter with the service, expressed

as a favourable emotion, satisfaction, indifference, or a negative feeling (dissatisfaction)' (Bhattacherjee, 2001). Furthermore, satisfaction and perceived utility influence a person's intention to continue using the IS, which is defined as 'the extent to which a user plans to keep using the IS.

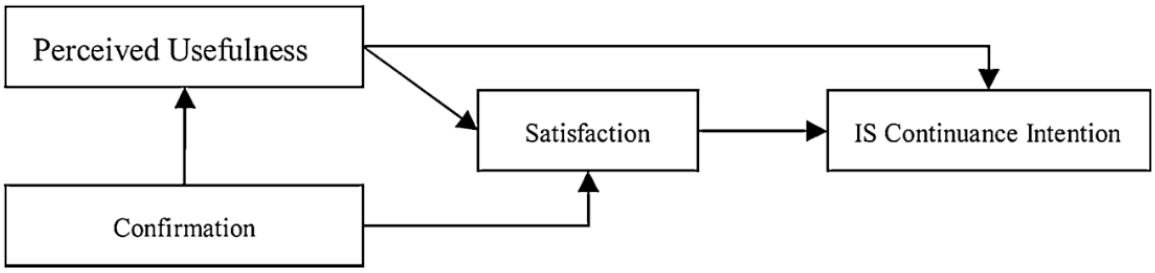

Figure 16. IS Continuance Model. **Source**: Bhattacherjee, (2001)

As illustrated in the chart, both satisfaction and perceived usefulness directly influence the aim to sustain the use of an information system, while confirmation indirectly affects this intention by shaping perceived usefulness and satisfaction. The IS continuance model, underpinned by a robust theoretical foundation, has been extensively applied to explain post-adoption behavioural intentions in various IS contexts, including e-government (Bhattacherjee et al., 2008) and e-learning (Limayem et al., 2008). Research grounded in this model consistently validates that satisfaction is the most significant indicator of reuse intention, exhibiting the highest consistency in its relationship with continuous-use intention across different studies (Bhattacherjee et al., 2008; Jiang and Xu, 2011; Limayem et al., 2008).

Bhattacherjee (2001) argues that perceived usefulness and confirmation are cognitive beliefs established through the evaluation of utility expectations before and after. These beliefs tend to be more easily influenced and biased compared to satisfaction, which arises directly from the experience of actual use. As noted by Li and Liu (2014), users' perception of usefulness will increase as a result of their confirmed experience with the information system (p. 1049). As a result, the choice to continue using an IS service is more strongly influenced by satisfaction than by perceived utility and validation, leading to ambiguity within the connection between these factors and their impact on IS continuance. To strengthen the explanatory capacity of the variables in our framework, this research emphasises satisfaction as the primary precursor to continuous-use intention and combines it into the perceived value framework. This approach underscores the pivotal role of user satisfaction in predicting continued IS usage and

seeks to deliver a clearer insight into the factors driving post-adoption behaviour. By emphasising satisfaction, this model aims to capture the essence of user experiences and their direct impact on continued engagement with information systems.

Numerous studies have validated the Expectation Confirmation Model (ECM) across a diverse array of IT products and services (Vatanasombut et al., 2008; Stone and Baker-Eveleth, 2013). Within the framework of food-sharing platforms, various dimensions of perceived value and perceived risk significantly influence user engagement. For example, platforms that effectively communicate their functional benefits, such as reducing food waste and providing cost savings, tend to achieve higher levels of continuous usage. Additionally, emotional and social values, such as the satisfaction derived from contributing to sustainability and a sense of community, further enhance user retention. Research has demonstrated that users tend to remain engaged with food-sharing platforms when they perceive high value in these areas.

In this research, the factors affecting the intention to continue using food-sharing applications are anticipated to differ owing to variations in their business models. Building on the perceived value literature and the findings from the initial study, we aim to create a more inclusive framework for intention to continue using food-sharing platforms by considering various dimensions of perceived value and perceived risk. These dimensions include price/value for money, performance/value for quality, social value, esteem (reputation) value, and play (fun) value.

5.2.3 Hypothesis Development

Existing research has embraced a multidimensional approach, proposing various typologies to better understand perceived value. These typologies typically involve evaluating a concept (such as a service experience) from the perspective of a subject, generally a consumer. Applying means-end theory, Zeithaml (1988) distinguished four aspects of perceived value: value as a low cost, value as the features a consumer desires in a product, value as the quality received for the price paid, and value as what a consumer gains relative to what they give. Similarly, Woodruff and Gardial (1998), along with Woodruff (1997), developed a 'value hierarchy' that assesses desired and received values, based on the expectancy disconfirmation theory. Mattson (1991) outlined three broad categories of perceived value: emotional, practical, and logical value. Investigating consumer choices—whether to make a purchase or not, to select among products, or to choose one brand over another—Sheth et al. (1991) proposed a

theory of consumption value, which includes functional, social, emotional, epistemic, and conditional values. Focusing on the behavioural aspect of perceived value, Holbrook (1994) described it as an 'interactive relativistic preference experience' and introduced a typology that aligns with earlier research. Holbrook's typology, based on three dichotomies (self-oriented vs. other-oriented, active vs. reactive, and extrinsic vs. intrinsic), consists of eight value types: efficiency (output/input ratio or convenience), excellence (quality), politics (success), esteem (reputation), play (enjoyment), aesthetics (beauty), morality (virtue), and spirituality (faith or ecstasy).

1. Price/value for money (Jillian and Geoffrey, 2001)
The product's utility is derived from the reducing of its perceived short- and long-term costs.
2. Performance/value for quality (Jillian and Geoffrey, 2001)
The perceived quality and expected performance of the product determine the utility.
3. Social value (Sheth et al. 1991)
The perceived utility is linked to positive or negative stereotypes of demographic, socioeconomic, and cultural-ethnic groups.
4. Esteem (reputation) value (Holbrook, 1994, 1999)
The perceived value derived from reflecting on one's own status, as influenced by the approval of others.
5. Play (fun) value (Holbrook, 1994, 1999).
The perceived value of a self-directed, active experience enjoyed for its own sake.

The conceptual model presented in this research seeks to investigate the connection between various dimensions of perceived value and perceived risk, and their impact on satisfaction and the continuous usage intention of food-sharing platforms. Based on existing literature and the theoretical framework, the following hypotheses are proposed:

1) Perceived Value
Price value denotes the describes the consumer's appraisal of the cost-benefit ratio of a service or product. In the context of food-sharing platforms, users often evaluate whether the benefits they receive justify the price they pay. Previous studies have demonstrated that price value significantly impacts overall perceived value (Sánchez-Fernández and Iniesta-Bonillo, 2009). Additionally, our initial study confirmed that price value influences consumers' intention to start using food-sharing platforms. Therefore, in this research, we are investigating whether

financial benefits will influence consumers' perceived value. Based on this, we hypothesise:

H1: Price value positively influences perceived value.

2) Performance Value

Performance value is connected to the perceived quality and effectiveness of a service or product in fulfilling its intended purpose. For food-sharing platforms, performance value encompasses the efficiency and reliability of the platform in reducing food waste and providing user satisfaction. Research has shown that higher performance value enhances overall perceived value (Zeithaml, 1988). This underscores the critical role of food quality in the context of food waste. Consequently, users of food-sharing platforms are more likely to perceive redistributed food as valuable if they consider it to be of high quality and effective performance. Our initial study explored the performance of food-sharing platforms, focusing on its influence on consumers' intention to start using these platforms. The findings suggested that the quality of food plays a significant function in ongoing use intention. Given the importance of food quality in shaping consumers' perceptions of redistributed food through sharing platforms, the following hypothesis is presented:

H2: Performance value positively influences perceived value.

3) Social Value

Social value pertains to the benefit obtained from the social impact and communal aspects associated with a service or product. In the case of food-sharing platforms, social value includes the sense of community and the positive environmental effects of reducing food waste. Studies have demonstrated that social value significantly contributes to the overall perceived value (Holbrook, 1994). The social value dimension of perceived value is based on the connection between the perceived usefulness of a product and the advantageous or harmful stereotypes associated with population, socioeconomic, and ethnic-cultural groups. According to Sheth et al. (1991), products associated with particular social groups have symbolic value in addition to their functional utility. Using food-sharing apps and consuming redistributed food can thus express consumers' social values and affiliation with specific social groups. In this study, social value refers to the enhancement of consumers' self-image in their social settings resulting from ordering food from food-sharing apps (Kaur et al., 2021). Our initial study examined social

influence, noting that the influence of friends and family could engage consumers in starting to use food-sharing platforms. In the current study, we focus on exploring whether social influence will keep consumers using the platforms. Therefore, we expect that consumers' perception of the social value of food-sharing apps will positively impact their overall perceived value of redistributed food. Considering this, we put forward the following hypothesis:

H3: Social value positively influences perceived value.

4) Esteem Value

Esteem value reflects the sense of pride and reputation enhancement gained from using a particular service or product. For users of food-sharing platforms, this may involve the recognition and respect received from peers for engaging in sustainable practices. Previous research suggests that esteem value positively impacts perceived value (Sheth et al., 1991). Esteem value is defined as the extent to which an individual derives perceived value from others' approval or admiration. In the context of food recycling, food-sharing activities are regarded as a waste minimisation strategy, which can enhance consumers' status and reputation. Previous research indicates that individuals' social identity and group membership significantly influence their food consumption behaviour and perceived value (Gallarza et al., 2017). Thus, it is justifiable to believe that esteem value can positively impact consumers' perceived value towards food-sharing platforms. Based on this, we propose:

H4: Esteem value positively influences perceived value.

5) Enjoyment Value

Enjoyment value relates to the enjoyment and fulfillment gained from the use of a service or product. In the context of food-sharing platforms, enjoyment value may be derived from the user experience, interface, and the gratification of participating in a sustainable initiative. Specifically, it is associated with the perceived worth of an autonomous, self-enjoyed experience pursued for its own merit. The autotelic nature of food-sharing activities and the enjoyment derived from these activities is considered as the fun value (Rajagopal and Kim, 2006). Building on this, the current study proposes the hypothesis that the enjoyment value dimension positively influences users' perceived value towards redistributed food. Specifically,

individuals who perceive food-sharing as a fun and enjoyable activity are likely to derive higher perceived value from consuming redistributed food. Our initial study validated that consumers' playfulness and curiosity encourage their usage intention. In this research, we further explore the influence of enjoyment value. Research indicates that enjoyment value is a critical factor in determining perceived value (Sweeney and Soutar, 2001). Thus, we hypothesise:

H5: Enjoyment value positively influences perceived value.

6) Satisfaction

Satisfaction is a post-consumption evaluation reflecting the user's contentment with a service or product. High perceived value often leads to greater satisfaction, as users feel that their anticipations have been achieved or exceeded. The literature consistently supports the direct relationship between perceived value and satisfaction (Bhattacherjee, 2001). In the existing literature, there is considerable diversity in the interpretations of customer satisfaction. However, researchers have identified three common constituents of satisfaction: an emotional and mental reaction aimed at a specific product or service, a consumption experience or expectation, and its occurrence at a specific time (Giese and Cote, 2000). Therefore, this study adopts a widely cited definition of customer satisfaction that encompasses these three elements. Specifically, customer satisfaction is defined as "the customer's response to the evaluation of the perceived discrepancy between prior expectations (or some norm of performance) and the actual performance of the product as perceived after its consumption," which can lead to customer satisfaction (Tse and Wilton, 1988, p. 204).

H6: Perceived value positively influences satisfaction.

Continuous usage intention denotes the probability that a user will persist in using a service or product. Satisfaction plays a crucial role in shaping this intention, as satisfied users are more likely to remain engaged and continue using the platform (Oliver, 1980). Numerous studies have confirmed this direct relationship (Bhattacherjee, 2001). Thus, we propose:

H8: Satisfaction positively influences continuous usage intention.

7) Perceived Risk

Perceived risk encompasses the possible adverse outcomes linked to with using a service or

product. Within the framework of food-sharing platforms, perceived risk includes concerns about food safety, privacy, and reliability. Higher perceived risk typically leads to lower satisfaction, as it undermines user trust and confidence (Featherman and Pavlou, 2003). In the realm of food consumption, there is a potential risk to consumers' safety when consuming redistributed food, and the sensitivity of food as a commodity exacerbates this risk. Previous literature has acknowledged perceived risk as a crucial determinant that negatively affects consumers' intention to use certain products or services (Chen and Dubinsky, 2003). Food, in particular, is vulnerable to quality and safety concerns due to its perishable nature. Improperly preserved or stale food can harbour harmful bacteria and toxins that may pose a threat to consumers' health. Additionally, consumers may be wary of food allergies and the potential lack of balanced nutrition in redistributed food.

Given the specificity of food as a commodity, consuming redistributed food may expose consumers to risks related to food safety. Perceived risk is recognised as an essential determinant that adversely influences usage intention (Chen and Dubinsky, 2003). The specific features of food, such as its sensitivity to health, safety, and quality, create unique risks in food recycling. As most of our daily food is perishable, improperly preserved or stale food can develop dangerous properties that endanger consumers' health. Furthermore, consumers' concerns about food allergies and unbalanced nutrition also influence their continuous usage of food-sharing platforms, especially when they experience inconsistent food quality from these platforms, as validated in our initial study. Therefore, we hypothesise:

H7: Perceived risk negatively influences satisfaction.

Perceived risk not only impacts satisfaction but also directly affects continuous usage intention. Users who perceive high risk are less likely to continue using the service due to concerns about potential negative outcomes (Gefen, 2000). Therefore, we hypothesise:

H9: Perceived risk negatively influences continuous usage intention.

Perceived value directly affects continuous usage intention, as users who perceive high value in a service or product are more inclined to continue using it. This relationship is well-documented in the literature, demonstrating that perceived value is a strong predictor of user retention and continued usage (Venkatesh et al., 2012). Hence, we propose:

H10: Perceived value positively influences continuous usage intention.

These hypotheses aim to offer a thorough insight into the factors affecting user engagement and retention in food-sharing platforms. By examining the interplay between perceived value, perceived risk, satisfaction, and continuous usage intention, this study seeks to contribute to the literature on IS continuance and the sustainability of digital platforms. The research model illustrating these relationships is shown in Figure 17.

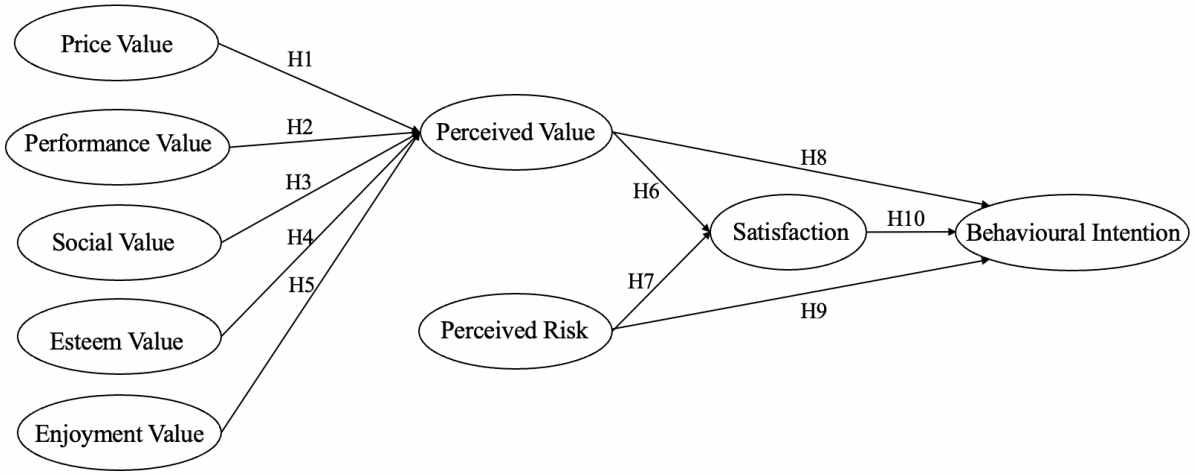

Figure 17. Study 2 Conceptual Model

5.3 Methodology

5.3.1 Context and Data Collection

To verify the proposed research model, a quantitative approach based on surveys was utilised in Study 2. Prior to distribution, the survey underwent a pre-test with 15 potential participants of varying ages and genders to ensure the clarity of all scale items. After incorporating necessary improvements according to their feedback, the revised survey was created using the Qualtrics platform.

Data collection commenced in March 2023 and was conducted through Amazon Mechanical Turk (MTurk), a widely used data source in the behavioural sciences and organisational psychology research community (Cheung et al., 2017). The MTurk platform, an online labour market administered by Amazon, allows researchers (Requesters) to hire and compensate workers for completing tasks such as surveys, transcription, tagging, and writing. MTurk

Workers possess system qualifications assigned by MTurk and customised qualifications assigned by Requesters. Qualification requirements can be utilised by Requesters to determine eligibility for participation in a task. As noted by Behrend et al. (2011), MTurk has been extensively utilised by social science researchers for recruiting participants for both experimental (Crump et al., 2013; Horton et al., 2011) and observational research (Buhrmester et al., 2011).

In this research, participants were users of food recovery platforms, including OLIO, Too Good To Go, and Food Cloud, based on the research setting. To confirm the consistency of the results, respondents were filtered based on their usage of food-sharing apps. This filtering process ensured that only those with experience in food-sharing platforms participated in the survey, providing relevant and accurate data for the study. The use of MTurk allowed for a diverse and representative sample, enhancing the generalisability of the research outcomes. By leveraging the capabilities of the MTurk platform and implementing rigorous data collection and validation procedures, this research intended to offer robust insights into the factors influencing user engagement and retention in food-sharing platforms.

5.3.2 Survey Instrument

A survey questionnaire was meticulously developed following an extensive review of the literature to identify the critical factors influencing consumers' decisions to discard food collected from food recovery platforms and to test the proposed relationships among perceived value, perceived risk, and user behaviour regarding continuous usage. The survey instrument was crafted based on a thorough examination of relevant literature on food recovery platforms, perceived value, perceived risk, and food-sharing platform behaviour. All constructs employed in the study were adapted from established research to ensure validity and reliability.

Price value was measured using five items adapted from Zielke (2010), capturing consumers' perceptions of the cost-effectiveness and affordability of food-sharing platforms. To assess performance value, five items from Namkung and Jang (2007) were used, evaluating the perceived quality and effectiveness of food-sharing platforms in fulfilling their intended purpose. Social value was measured using six items adapted from Kaur et al. (2021), exploring the communal and social benefits that users perceive from participating in food-sharing activities. Four items from Gallarza et al. (2017) were used to evaluate esteem value, reflecting the sense of pride and reputation enhancement that users derive from engaging in sustainable

practices through food-sharing platforms. Enjoyment value was measured using five items adapted from Sweeney and Soutar (2001), assessing the pleasure and satisfaction derived from using food-sharing platforms.

Overall perceived value was measured using six items adapted from Konuk (2019), capturing the comprehensive assessment of the benefits and sacrifices associated with using food-sharing platforms. Six statements were developed to assess respondents' attitudes towards the perceived risks associated with consuming redistributed food, adapted from Choi et al. (2013). These statements cover concerns related to food safety, privacy, and reliability. Five items measuring consumer satisfaction were adapted from Konuk (2019), reflecting users' contentment and satisfaction with their experiences on food-sharing platforms. Consumers' behavioural intentions towards consuming redistributed food were evaluated using six items adapted from Konuk (2019), assessing the likelihood of users continuing to engage with food-sharing platforms based on their perceived value and satisfaction.

A comprehensive summary of all constructs and their corresponding measurement items is presented in Table 12. This rigorous development process ensures that the survey instrument is both reliable and valid, providing robust data for analysing the factors influencing user engagement and retention in food-sharing platforms.

Price value (PRI)		
PRI1	Food from food-sharing apps is offered at a low price (or free).	Zielke (2010)
PRI2	Food from food-sharing apps is sold at an acceptable price.	
PRI3	The prices of food from food-sharing apps are justifiable.	
PRI4	Food from food-sharing apps is sold at a reasonable price.	
PRI5	The price-performance ratio of food from food-sharing apps is very good.	
Food Performance value (PERF)		
PERF1	Food from food-sharing apps is usually fresh.	Namkung and Jang (2007)
PERF2	Food from food-sharing apps looks the same as those sold in stores.	
PERF3	Food from food-sharing apps is usually well packaged.	
PERF4	Brands of food from food-sharing apps can be identified.	
PERF5	Food from food-sharing apps tastes good.	
Social value (SOC)		
SOC1	Using food sharing apps helps me to gain social approval.	Kaur et al. (2021)
SOC2	After using food sharing apps, I feel like I made a personal contribution to advancing the role of technology in human.	
SOC3	Using of food sharing apps helps to make a positive impression on other people.	

SOC4	Using food sharing apps helps me improve my social relationships.	
SOC5	Using food sharing apps changed the way that I am perceived by others.	
SOC6	Using food sharing apps helps me to stand out among my peers.	
Esteem value (EST)		
EST1	Using food sharing apps would help me to feel respected.	Gallarza et al (2017)
EST2	Using food sharing apps would give me a reputation.	
EST3	Using food sharing apps would increases my sense of self-worth.	
EST4	I get a sense of pride when I use food sharing apps.	
Enjoyment value (ENJ)		
ENJ1	I enjoy using food sharing apps.	Sweeney and Soutar (2001)
ENJ2	Using food sharing apps satisfies my curiosity.	
ENJ3	Using food sharing apps makes me feel surprised	
ENJ4	Using food sharing apps makes me feel good.	
ENJ5	Using food sharing apps gives me pleasure.	
Perceived value (PERV)		
PERV1	The money that I spend on food sharing apps is well spent.	Konuk (2019)
PERV2	What I receive (benefits) from food sharing apps compensates for the price I pay for them.	
PERV3	I am willing to pay for food from food sharing apps in the context of combating food waste.	
PERV4	Food from food sharing apps is a good buy.	
PERV5	Food from food sharing apps is worth the money.	
PERV6	Food from food sharing apps provides me with great value compared to other food options.	
Perceived risk (RISK)		
RISK1	Food from food sharing apps may not be fresh.	Choi et al. (2013)
RISK2	Food from food sharing apps may not be stored properly.	
RISK3	Food from food sharing apps may have unsanitary conditions.	
RISK4	Food from food sharing apps may cause food poisoning.	
RISK5	Food from food sharing apps may cause food allergies.	
RISK6	Food from food sharing apps may cause unbalanced nutrition.	
Satisfaction (SAT)		
SAT1	I am satisfied with food sharing apps.	Konuk (2019)
SAT2	If I had to purchase again, I would still feel satisfied.	
SAT3	Purchasing from food sharing apps was a wise decision.	
SAT4	I really enjoy eating food from food sharing apps.	
SAT5	Overall, these foods put me in a good mood.	
Behavioural intention (BI)		
BI1	I intend to increase my usage of food sharing platforms.	Konuk (2019)
BI2	My willingness to continuously use food sharing platforms is very high.	
BI3	I would recommend food sharing platforms to my friends and others.	
BI4	I would say positive things about food sharing platforms to others.	
BI5	I will use food sharing apps more frequently.	
BI6	I will consider food sharing platforms as my first option for food sourcing compared to other methods.	

Table 12. Summary of Constructs

5.3.3 Common Method Bias (CMB) and Non-Response Bias (NRB)

The focus of this study is the user of food-sharing applications. As data collection involved a single informant for each analytical unit, both procedural and statistical strategies were employed to address potential Common Method Bias (CMB) and Non-Response Bias (NRB) (Podsakoff et al., 2003).

To address Common Method Bias (CMB), Harman's single-factor test was performed, which is the most widely used method (Podsakoff et al., 2003). The nine constructs, along with their associated items, were subjected to exploratory factor analysis using an unrotated factor solution. The results showed that six components had an eigenvalue greater than 1, and the first component accounted for only 39.932% of the total variance. This is below the threshold of 50% recommended by Podsakoff et al. (2003), indicating that CMB had a limited impact on our study.

To assess Non-Response Bias (NRB), we compared the demographic characteristics of early and late respondents to determine if there were any significant differences (Armstrong and Overton, 1977). A one-way ANOVA was performed on gender, age group, education, occupation, and annual household income between the first 50 reported responses and the final 50 responses. The resulting p-values were 0.461 for gender, 0.082 for age group, 0.670 for education, 0.310 for occupation, and 0.620 for annual household income. These results show no notable differences in demographic characteristics between early and late responses. Therefore, we can conclude that NRB does not pose a significant threat to the reliability and generalisability of the research outcomes.

By employing these procedural and statistical measures, we have ensured that the data collected are robust and free from biases that could undermine the validity of our findings. This rigorous approach enhances the credibility of our research and supports the dependability of the conclusions derived from the data.

5.3.4 Data Analysis

During the preliminary phase of the analysis, the collected data underwent an initial screening process to ensure completeness and accuracy. Following this, the underlying dimensions of the constructs were examined. Specifically, the constructs of Price Value (PRI), Performance Value (PERF), Social Value (SOC), Esteem Value (EST), Enjoyment Value (ENJ), Perceived Risk (RISK), and Behavioural Intention (BI) towards using food-sharing platforms were explored using exploratory factor analysis (EFA) with principal axis factoring and Varimax rotation techniques.

Subsequently, the complex interrelationships between the variables were analysed using partial least squares-structural equation modelling (PLS-SEM) with the assistance of SmartPLS 3.0. The decision to employ PLS-SEM in this study was based on three primary considerations. Firstly, as recommended by Hair et al. (2017), the structural model was intricate, encompassing multiple constructs, indicators, and model relationships, making PLS-SEM the preferred technique. Specifically, the research model comprised nine constructs, each measured by four to six items, and included ten hypothesised relationships.

Secondly, PLS-SEM is an appropriate technique for structural models that aim to gain a better understanding of increasing complexity through the exploration of theoretical extensions of established theories, which aligns with exploratory studies for theoretical advancement. While the research model in this study was grounded in a well-established theory—perceived value theory—it was still largely exploratory, as perceived value, perceived risk, and key influencing factors of redistributing food had not been validated in prior studies.

Finally, because of the comparatively small population with experience in using food-sharing platforms, the number of participants in this research was limited, further justifying the use of PLS-SEM. The recommended data analysis procedures by Hair et al. (2014) were followed. The first step involved assessing the measurement model, which included evaluating the dependability and accuracy of the constructs. This involved checking internal consistency, convergent validity, and discriminant validity to ensure the measurement instruments were robust.

The second step involved evaluating the structural framework to investigate the proposed relationships among the constructs. This included assessing the pathway coefficients, t-values,

and the R-squared values to determine the strength and significance of the relationships within the model. This approach ensured the validity and reliability of the measurements and the structural relationships in the research model, providing a comprehensive understanding of the elements affecting user retention in food-sharing platforms.

5.4 Findings

5.4.1 Preliminary Analysis

According to the results presented in Table 13, a total of 300 surveys were disseminated, of which 252 (84%) were returned and deemed valid for further data analysis. The demographic characteristics of the participants revealed that 58.33% were male, and 41.67% were female. Most respondents (60.71%) were in the age range of 18–34 years, with 28.57% falling between 35 and 49 years of age. The age range of 18–49 years comprised the majority of participants, accounting for 89.28% of the sample, while only 0.79% of the respondents were aged 65 or above.

In terms of educational attainment, the largest proportion of the sample (41.27%) held a bachelor's degree, while 28.57% held a master's degree. With respect to occupation, employees constituted the largest group, representing 55.95% of the sample, followed by students at 21.43%. Regarding income distribution, 36.51% of respondents reported an annual household income ranging from £25,001 to £50,000, with 36.91% reporting an income of less than £25,000 per year. As for household size, the majority of respondents (31.35%) reported a household size of two, while 20.63% and 20.24% reported having three or four family members, respectively.

This demographic data serves as a crucial foundation for further analysis and interpretation of the study results. The diversity in age, gender, education, occupation, income, and household size ensures a representative sample, allowing for robust and generalisable insights into the behaviours and attitudes of food-sharing platform users.

Gender	**Frequency**	**Percentage (%)**
Male	147	58.33
Female	105	41.67
Age group	**Frequency**	**Percentage (%)**
Under 18	9	3.57
18-34	153	60.71
35-49	72	28.57
50-64	16	6.35
More than 65	2	0.79
Education	**Frequency**	**Percentage (%)**
Primary	9	3.57
Secondary Bachelors	62	24.60
Bachelors	104	41.27
Masters	72	28.57
Doctorate, Prof. etc	5	1.98
Occupation	**Frequency**	**Percentage (%)**
Employee	141	55.95
Self-employed	39	15.48
Unemployed, pensioner, housewife etc	18	7.14
Student	54	21.43
Annual household income	**Frequency**	**Percentage (%)**
< £10, 000	36	14.29
£10, 001 to £25, 000	57	22.62
£25, 001 to £50, 000	92	36.51
£50, 001 to £75, 000	43	17.06
£75, 001 to £100, 000	16	6.35
>£100, 001	8	3.17
Household size	**Frequency**	**Percentage (%)**
1	48	19.05
2	79	31.35
3	52	20.63
4	51	20.24
5	15	5.95
6 or more	7	2.78

Table 13. Summary of Sample Demographics

5.4.2 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is a widely employed data-driven approach in social science research, used to identify underlying constructs and assess their internal reliability. The primary objective of EFA is to reduce a large number of interrelated variables into a smaller, more meaningful set of constructs (Norusis, 2007). In this study, five dimensions of perceived value (i.e., price value, performance value, social value, esteem value, and enjoyment value), perceived risk, and behavioural intention were utilised to measure consumers' attitudes. Although all constructs were adapted from prior research, these specific dimensions of

perceived value were employed for the first time to measure consumers' attitudes towards food-sharing platforms. Therefore, EFA was utilised in this research to explore the underlying inter-factor relationships and identify the essential structures by reducing the number of variables.

The sample size for the EFA method was determined based on the ratio of the sample size to the number of variables. For this research, the ratio of the sample size (n=252) to the number of variables (n=48) was 5.25, which exceeded the recommended value of 5.00 (Kyriazos, 2018). Thus, the sample size was deemed adequate for this study. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to assess the appropriateness of the data for EFA. The KMO test assesses whether the values are sufficiently distributed in the measurement sample for factor analysis. In the present study, the KMO measure of sampling adequacy was 0.913, which exceeded the threshold of 0.60, indicating that the data were suitable for factor analysis. Bartlett's test of sphericity was also significant, χ^2 (252) = 5094.145, $p < .001$, suggesting that the EFA method was appropriate. These statistical tests confirmed that the data were suitable for conducting factor analysis.

Principal Axis Factoring (PAF) was utilised as the extraction method for the EFA due to its ability to produce more stable loadings compared to other extraction methods (De and Dodou, 2012). The criterion used for identifying a construct was a factor-loading threshold value of 0.50, leading to the removal of indicators with factor loadings below this value from further analysis (Field, 2013). Three indicators, namely PRI5, ENJ3, and RISK3, were removed from the initial analysis based on this criterion. Additionally, four items—SOC4, RISK6, BI3, and BI4—were excluded from the analysis due to their high cross-loadings or factor loadings on other factors. The initial EFA produced seven factors with eigenvalues higher than 1.0, explaining a total variance of 73.077%. Among these factors, Esteem value (EST) accounted for the largest variance (36.292%), followed by Price value (PRI) (11.653%), Performance value (PERF) (7.617%), Social value (SOC) (5.344%), Perceived risk (RISK) (4.581%), Behavioural intention (BI) (3.994%), and Enjoyment value (ENJ) (3.595%).

Overall, the PAF method employed in this study demonstrated its ability to provide stable loadings. By applying the factor-loading threshold value of 0.50, a set of seven factors was identified that accounted for a considerable proportion of the variance in the data. The removal of several indicators from the initial analysis suggests that the remaining indicators adequately captured the underlying constructs. These results provide a solid basis for the subsequent PLS-

SEM analysis.

Rotated Factor Matrix[a]							
	Factor						
	1	2	3	4	5	6	7
EST4	.790						
EST2	.782						
EST3	.772						
EST1	.745						
PRI2		.765					
PRI4		.761					
PRI3		.750					
PRI1		.699					
PERF4			.711				
PERF5			.672				
PERF2			.656				
PERF3			.651				
PERF1			.583				
SOC1				.759			
SOC2				.675			
SOC3				.669			
SOC6				.582			
SOC5				.549			
RISK2					.843		
RISK4					.744		
RISK1					.713		
RISK5					.661		
BI5						.662	
BI2						.646	
BI6						.603	
BI1						.575	
ENJ1							.683
ENJ2							.683
ENJ5							.554
ENJ4							.518
Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 7 iterations.							

Table 14. Exploratory Factor Analysis (EFA) Results

5.4.3 Measurement Model Assessment

In accordance with the procedures recommended by Hair et al. (2019), SmartPLS software 3 was utilised to perform the PLS-SEM analysis on the data. During the measurement model assessment, five variables (PRI4, PERF1, ENJ4, SAT2, and SOC2) were removed from the analysis.

The preliminary stage of evaluating the reflective measurement model involved examining the indicator loadings, as suggested by Hair et al. (2019). Table 15 presents the standardised factor loadings of measurement items, all of which exceed the threshold value of 0.708, indicating that each item accounts for more than 50% of the indicator's variance, thereby achieving satisfactory item reliability. Having confirmed item reliability, the next step was to assess the internal consistency reliability of the constructs. As shown in Table 15, all constructs exhibit Cronbach's α coefficients above the recommended threshold of 0.7, and their respective composite reliability (CR) values range between 0.8 and 0.95, indicating strong internal consistency and reliability (Hair et al., 2019).

Convergent validity and discriminant validity represent the third step in the measurement model assessment. Table 15 demonstrates that the average variance extracted (AVE) values of all constructs exceed the threshold value of 0.5, supporting the satisfactory convergent validity of the measurement model. To evaluate discriminant validity, two indicators were used: the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio (Fornell and Larcker, 1981; Hair et al., 2019). As demonstrated in Table 16, the AVE value of each construct is greater than its squared correlations with other constructs, thus satisfying the Fornell-Larcker criterion. Furthermore, as shown in Table 17, all HTMT values are below the recommended threshold of 0.9, suggesting that the constructs are not conceptually aligned.

In conclusion, the measurement model assessment yielded satisfactory results, providing a robust foundation for the subsequent structural model assessment. These rigorous procedures ensure that the measurement model accurately captures the underlying constructs, which is essential for validating the hypothesised relationships in the research model.

Construct and measurement items	Factor loading	VIF	Source
Price value (Cronbach's α = 0.894, AVE = 0.825, CR = 0.934)			
PRI1 Food from food-sharing apps is offered at a low price (or free).	0.87	2.783	Zielke (2010)
PRI2 Food from food-sharing apps is sold at an acceptable price.	0.824	2.791	
PRI3 The prices of food from food-sharing apps are justifiable.	0.795	2.495	
Performance value (Cronbach's α = 0.814, AVE = 0.641, CR = 0.877)			
PERF2 Food from food-sharing apps looks the same as those sold in stores.	0.837	1.831	Namkung and Jang (2007)
PERF3 Food from food-sharing apps is usually well packaged.	0.78	1.647	
PERF4 Brands of food from food-sharing apps can be identified.	0.82	1.672	
PERF5 Food from food-sharing apps tastes good.	0.763	1.641	
Social value (Cronbach's α = 0.818, AVE = 0.643, CR = 0.878)			
SOC1 Using food sharing apps helps me to gain social approval.	0.823	1.73	Kaur et al., (2021)
SOC3 Using of food sharing apps helps to make a positive impression on other people.	0.835	1.725	
SOC5 Using food sharing apps changed the way that I am perceived by others.	0.774	1.758	
SOC6 Using food sharing apps helps me to stand out among my peers.	0.775	1.756	
Esteem value (Cronbach's α = 0.902, AVE = 0.772, CR = 0.931)			
EST1 Using food sharing apps would help me to feel respected.	0.899	2.847	Gallarza et al (2017)
EST2 Using food sharing apps would give me a reputation.	0.879	2.878	
EST3 Using food sharing apps would increases my sense of self-worth.	0.879	2.758	
EST4 I get a sense of pride when I use food sharing apps.	0.857	2.648	
Enjoyment value (Cronbach's α = 0.879, AVE = 0.805, CR = 0.925)			
ENJ1 I enjoy using food sharing apps.	0.916	2.798	Sweeney and Soutar (2001)
ENJ2 Using food sharing apps satisfies my curiosity.	0.914	2.721	
ENJ5 Using food sharing apps gives me pleasure.	0.86	2.067	
Perceived value (Cronbach's α = 0.894, AVE = 0.703, CR = 0.922)			
PERV1 The money that I spend on food sharing apps is well spent.	0.87	2.612	Konuk
PERV2 What I receive (benefits) from food sharing apps compensates for the price I pay for them.	0.824	2.146	

PERV3 I am willing to pay for food from food sharing apps in the context of combating food waste.	0.795	1.917	(2019)
PERV4 Food from food sharing apps is a good buy.	0.848	2.457	
PERV5 Food from food sharing apps is worth the money.	0.853	2.462	
Perceived risk (Cronbach's α = 0.818, AVE = 0.647, CR = 0.88)			
RISK1 Food from food sharing apps may not be fresh.	0.783	1.905	Choi et al., (2013)
RISK2 Food from food sharing apps may not be stored properly.	0.843	2.303	
RISK4 Food from food sharing apps may cause food poisoning.	0.801	1.969	
RISK5 Food from food sharing apps may cause food allergies.	0.788	1.749	
Satisfaction (Cronbach's α = 0.892, AVE = 0.756, CR = 0.925)			
SAT1 I am satisfied with food sharing apps.	0.856	2.262	Konuk (2019)
SAT3 Purchasing from food sharing apps was a wise decision.	0.898	2.841	
SAT4 I really enjoy eating food from food sharing apps.	0.894	2.883	
SAT5 Overall, these foods put me in a good mood.	0.828	2.218	
Behavioural intention (Cronbach's α = 0.83, AVE = 0.661, CR = 0.886)			
BI1 I intend to increase my usage of food sharing platforms.	0.808	1.925	Konuk (2019)
BI2 My willingness to continuously use food sharing platforms is very high.	0.858	2.1	
BI5 I will use food sharing apps more frequently.	0.838	1.876	
BI6 I will consider food sharing platforms as my first option for food sourcing compared to other methods.	0.744	1.623	

Table 15. Construct Measures

	BI	ENJ	EST	PERF	PERV	PRI	RISK	SAT	SOC
BI	0.813								
ENJ	0.601	0.897							
EST	0.491	0.532	0.879						
PERF	0.532	0.566	0.363	0.8					
PERV	0.586	0.555	0.335	0.7	0.838				
PRI	0.523	0.452	0.304	0.668	0.809	0.908			
RISK	0.186	0.122	0.253	-0.034	-0.023	-0.022	0.804		
SAT	0.636	0.626	0.366	0.708	0.763	0.71	-0.028	0.869	
SOC	0.557	0.505	0.471	0.628	0.71	0.687	0.094	0.656	0.802

Table 16. Fornell-Larcker Criterion Results

	BI	ENJ	EST	PERF	PERV	PRI	RISK	SAT	SOC
BI									
ENJ	0.704								
EST	0.58	0.602							
PERF	0.638	0.664	0.42						
PERV	0.666	0.623	0.362	0.809					
PRI	0.59	0.505	0.327	0.767	0.802				
RISK	0.233	0.153	0.303	0.101	0.117	0.114			
SAT	0.731	0.708	0.403	0.816	0.85	0.792	0.118		
SOC	0.668	0.597	0.558	0.752	0.811	0.786	0.193	0.745	

Table 17. HTMT Results

5.4.4 Structural Model Assessment

To evaluate the structural model of the PLS-SEM, the guidelines established by Hair et al. (2019) were meticulously followed. The coefficients of the structural model were obtained through the estimation of a set of regression equations. However, before assessing the structural relationships, it was essential to examine potential collinearity issues by calculating the variance inflation factor (VIF) values. A VIF value exceeding 5 may indicate collinearity problems among the predictor constructs, while values between 3 and 5 can also suggest the occurrence of such issues (Hair et al., 2019). As indicated in Table 15, all VIF values were found to be below the threshold of 3, providing evidence that multicollinearity had minimal impact on the results. This assessment establishes a solid foundation for further examining the structural relationships between the constructs.

Following the assessment of multicollinearity, the subsequent step in assessing the PLS-SEM results involves evaluating the structural model. The evaluation criteria typically recommended by Hair et al. (2019) include the coefficient of determination (R^2), the blindfolding-based cross-validated redundancy measure (Q^2), and the statistical significance and relevance of the path coefficients.

The coefficient of determination (R^2) assesses the model's explanatory power, with values of 0.75, 0.50, and 0.25 regarded as substantial, moderate, and weak, respectively (Hair et al., 2019). The results show that the R^2 values for PERV, SAT, and BI are 0.739, 0.580, and 0.471, respectively, indicating that the model explains 73.9%, 58.0%, and 47.1% of the variance for

these constructs. These values suggest a medium to high explanatory power for the model.

The blindfolding-based cross-validated redundancy measure (Q^2) evaluates the predictive accuracy of the PLS-SEM model, considering both out-of-sample prediction and in-sample explanatory power. Values above 0, 0.25, and 0.50 signify low, medium, and high predictive relevance of the model, respectively (Hair et al., 2019). The Q^2 values for PERF, SAT, and BI are 0.510, 0.431, and 0.300, respectively, suggesting a medium to high level of predictive accuracy.

According to the structural model assessment, it was determined that the three control variables—Gender, Age, and Education—do not exhibit a statistically significant impact on the dependent variables. This conclusion is based on the results presented in Figure 20, which indicate that the coefficients associated with these variables are not significant at the chosen level of significance.

In summary, the structural model assessment provided robust evidence of the model's explanatory and predictive power. The analysis confirms that the hypothesised relationships among perceived value, satisfaction, behavioural intention, and perceived risk are well-supported, offering valuable insights into the factors influencing the continuous usage intention of food sharing platforms.

Hypotheses Testing

This study conducted a bias-corrected and accelerated (BCa) bootstrapping procedure with 252 cases and 5,000 subsamples to test the proposed hypothesis, and the results are summarised in Table 18, Table 19 and Figure 18.

The structural model assessment of the partial least squares structural equation modelling (PLS-SEM) yielded significant findings related to the proposed research hypotheses. The original model structure, which comprised ten research hypotheses, did not find support for three of these hypotheses (H4, H7, and H9). Consequently, a revised model was developed, as depicted in Figure 19, to improve model fit and address the shortcomings of the initial model. The new model was constructed based on the sequential set of hypotheses proposed in the study. The hypotheses in the revised model explained approximately 73.6% of the variance in perceived value, 58% in satisfaction, and 47.1% in behavioural intention, as indicated by the

R^2 values in Figure 19. Collectively, these findings provide strong evidence for the relevance and robustness of the proposed constructs chain.

		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values	Remarks
H1	PRI -> PERV	0.499	0.498	0.053	9.388	0.000	Supported
H2	PERF -> PERV	0.165	0.167	0.053	3.107	0.002	Supported
H3	SOC -> PERV	0.211	0.210	0.053	4.010	0.000	Supported
H4	EST -> PERV	-0.064	-0.062	0.043	1.495	0.135	Not Supported
H5	ENJ -> PERV	0.164	0.164	0.052	3.163	0.002	Supported
H6	PERV -> SAT	0.761	0.756	0.038	19.913	0.000	Supported
H7	RISK -> SAT	-0.011	-0.012	0.049	0.218	0.827	Not Supported
H8	PERV -> BI	0.237	0.239	0.077	3.064	0.002	Supported
H9	RISK -> BI	0.206	0.212	0.059	3.491	0.000	Not Supported
H10	SAT -> BI	0.462	0.465	0.066	6.990	0.000	Supported

Table 18. Results of Direct Effects

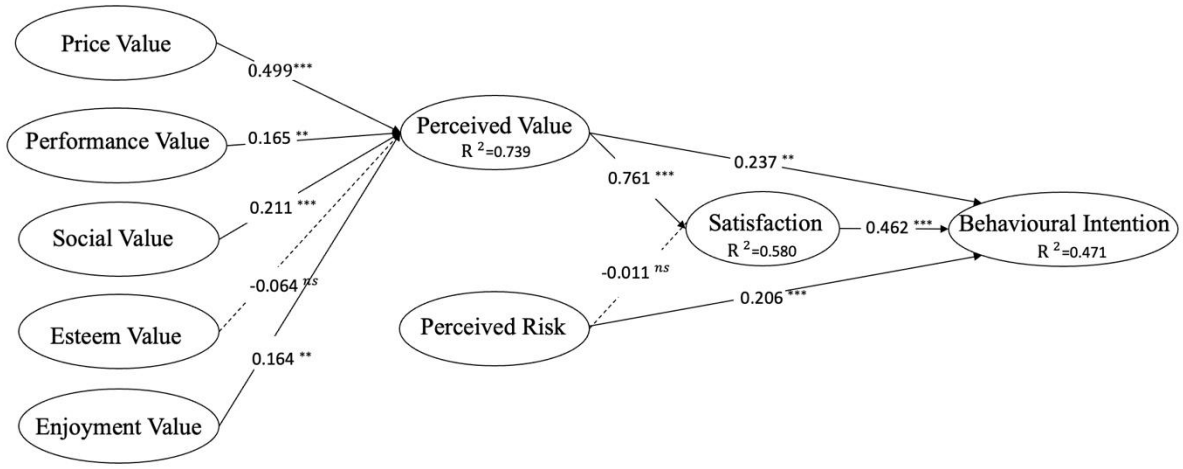

Figure 18. Results of the Proposed Model (**p < 0.01, ***p < 0.001, ns: Not Significant)

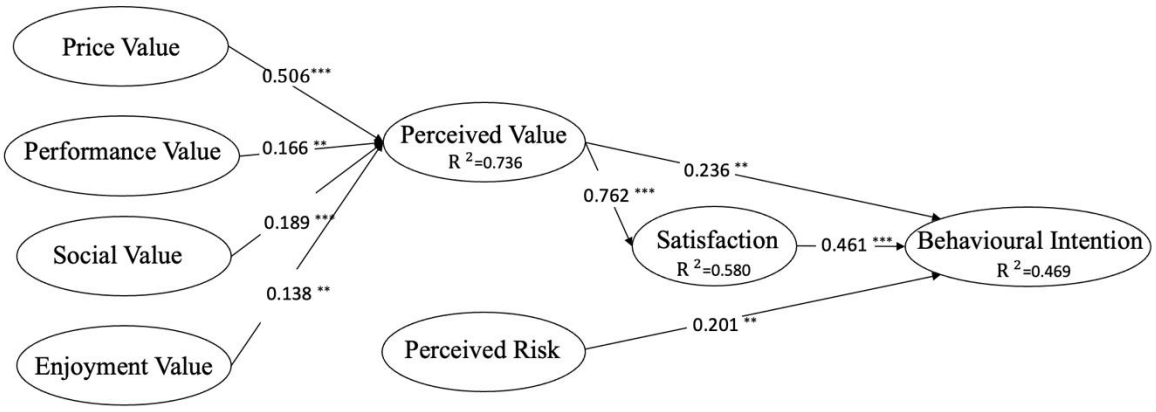

Figure 19. Results of the Revised Model (**p < 0.01, ***p < 0.001, ns: Not Significant)

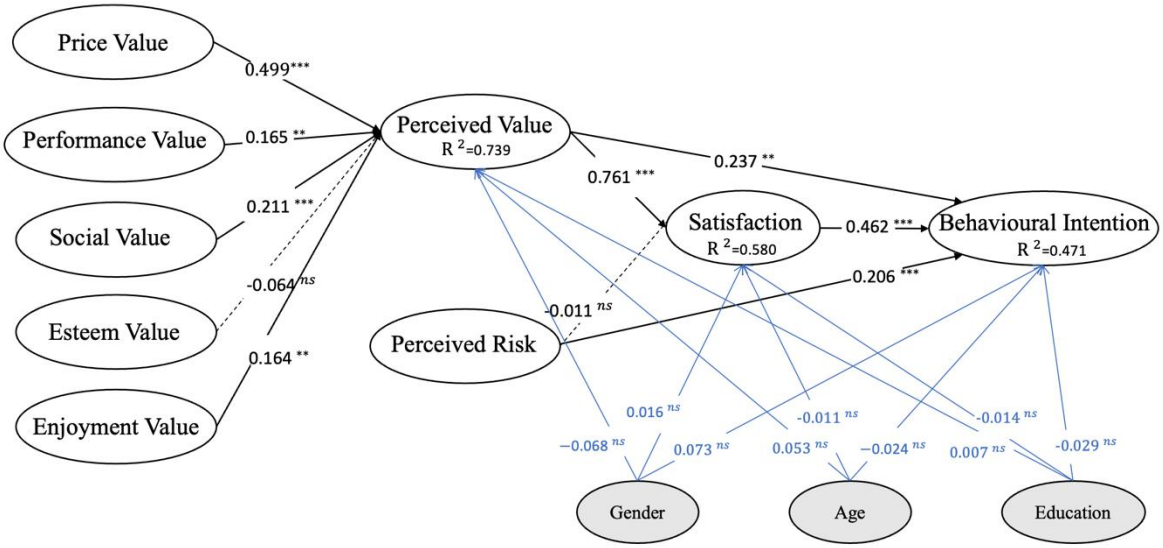

Figure 20. Structural Model Results with Control Variables (*p < 0.05, **p < 0.01, ***p < 0.001)

Hypothesis	Relationship	p-value	Support
H1	Price value -> Perceived value	0.0	Supported
H2	Performance value -> Perceived value	0.002	Supported
H3	Social value -> Perceived value	0.0	Supported
H4	Esteem value -> Perceived value	0.135	Not Supported
H5	Enjoyment value -> Perceived value	0.002	Supported
H6	Perceived value -> Satisfaction	0.0	Supported
H7	Perceived risk -> Satisfaction	0.827	Not Supported
H8	Satisfaction -> Continuous usage intention	0.002	Supported
H9	Perceived risk -> Continuous usage intention	0.0	Not Supported
H10	Perceived value -> Continuous usage intention	0.0	Supported

Table 19. Hypotheses Testing Summary

5.4.5 Robustness Test

We adhered to the approach of Sarstedt et al. (2020) for conducting robustness checks on the structural model. First, we investigated the presence of non-linear relationships by integrating quadratic effects into the PLS-SEM model. The results of this analysis, presented in Table I in Appendix B, strongly support a linear relationship across the variables in this model, since all p-values exceeded 0.05.

Next, we evaluated the presence of unobserved heterogeneity and its potential impact on the robustness of our results using the finite mixture PLS (FIMIX-PLS) method, following the multi-method framework established by Sarstedt et al. (2020). The fit indices for the one- to four-segment solutions present an ambiguous scenario (see Table II). Sarstedt et al. (2011) demonstrated that when AIC3 and CAIC suggest the same number of segments, it likely reflects the correct segmentation. However, in our analysis, AIC3 indicates a four-segment solution, while CAIC suggests a one-segment solution. Furthermore, Sarstedt et al. (2011) note that AIC4 and Bayesian information criteria (BIC) are generally effective in determining the number of segments in FIMIX-PLS. In our case, AIC4 indicates a two-segment solution, while BIC suggests a one-segment solution. Taken together, these analyses do not decisively indicate a specific segmentation solution, suggesting that unobserved heterogeneity does not significantly threaten the reliability of our findings.

To address potential endogeneity, which may introduce bias into the structural model results due to correlations in structural errors between endogenous variables, we employed the Gaussian copulas approach (Park and Gupta, 2012). Bootstrapping analysis conducted using Smart PLS 4 indicated that none of the Gaussian copulas (i.e., PRI, PERF, SOC, ETS, ENJ, PERV, SAT, RISK, and SAT) were significant (p-value > 0.05) (Hult et al., 2018). We also examined all other combinations of two Gaussian copulas included in the model, and none were significant (i.e., Model 9-36). Consequently, we conclude that endogeneity does not pose a significant concern in our study. Detailed results of these tests can be found in Table III in Appendix B.

5.5 Discussion

The findings of this study support several of the proposed hypotheses. Specifically, H1, H2, H3, and H5 are validated, demonstrating that price value, performance value, social value, and enjoyment value are all significantly and positively related to consumers' overall perceived value of food sharing apps. These results hold important implications for both researchers and practitioners aiming to comprehend the factors influencing consumers' perceptions and continuous usage intention towards food sharing apps.

Price Value

The present study confirms a positive relationship between price value and the overall perceived value of redistributed food (H1), aligning with prior research that suggests suboptimal foods offered at reduced prices are well received. H1 implies that food sharing apps must provide substantial benefits, reasonable prices, and good value for money in order to positively influence customer attitudes. Our findings indicate that redistributed food, which may deviate from standard appearance, needs to offer customers consistent benefits, such as larger quantities and preferential pricing, to enhance the perceived price value of using food sharing apps. This increased price value, in turn, positively influences consumers' behavioural intentions to consume these foods and improves the efficiency of food recycling cycles. Furthermore, Study 1 revealed that consumers using food sharing apps to order food are primarily price-sensitive and motivated by cost advantages. This result is consistent with the findings of Study 1, which suggested that financial benefits play a significant role in influencing consumers' continuous usage intentions.

Performance Value

In this study, the dimension of performance value was examined in the context of the perceived value of redistributed food products on food sharing platforms. Performance value is defined as the extent to which a product's quality and expected performance meet or exceed customers' expectations. The empirical findings support the idea that performance value plays a significant role in determining the perceived value of food sharing platforms and further influences consumers' continuous usage intentions. This is consistent with previous studies that have identified performance value as a key determinant of overall perceived value (Sara et al., 2018). From the customers' perspective, the results suggest that when the perceived quality of redistributed food products is high, customers are more likely to perceive the price of these

products as fair. Specifically, customers expect good appearance, intact packaging, tasty food, and recognisable brands to be associated with high-quality food. Therefore, providing high-quality food products is essential for food sharing platforms to build a positive reputation, enhance customer satisfaction, and increase their continuous usage intentions. These findings underscore the critical influence of performance value on the perceived value of food sharing platforms, subsequently impacting users' continuous usage intentions. The results align with those from Study 1, which emphasised the importance of product quality in shaping consumers' intentions to continue using such platforms. Thus, food sharing platforms must prioritise maintaining high standards of food quality to retain and attract customers.

Social Value

H3, which posited that social value is positively associated with the perceived value of redistributed food, received strong support from the study results. The findings suggest that customers view ordering food from food-sharing apps as a means of enhancing their self-image and creating a positive impression. This aligns with previous research on food consumption, where individuals associate prestige with the places they dine (Kim and Lee, 2017). Using food-sharing apps and consuming redistributed food can thus signal consumers' social values and their affiliation with specific social groups. The results also confirm that, from consumers' perspectives, food-sharing platforms can enhance their social perception and foster positive impressions by reducing food waste and addressing food poverty, thereby increasing the social value of their consumption. This social value, in turn, boosts their intention to continuously use food-sharing apps. For instance, consumers may derive social value from using these apps as a convenient way to order redistributed food while socialising with friends, thereby expressing their environmental awareness and commitment to sustainability. These findings underscore the importance of social value in shaping consumers' continuous usage intentions for food-sharing platforms, highlighting the need for these platforms to emphasise their social and environmental benefits to attract and retain users.

Esteem Values

H4 proposed that esteem values are positively associated with consumers' perceived value of food sharing apps. However, the findings did not support this hypothesis. Esteem value was measured based on consumers' sense of respect, self-worth, reputation, and pride when using the platform. One potential explanation for the lack of support for this hypothesis is that consumers may prioritise the positive social image and impressions they can make through

using food-sharing apps over enhancing their sense of esteem. This aligns with the earlier discussion of social value and its positive influence on consumers' perceived value of food-sharing apps.

Additionally, it is possible that consumers may not experience feelings of pride or self-worth when using the platform due to the nature of the transactions, which often involve obtaining food at a reduced or even free price. This is particularly relevant for low-income individuals, students, and families struggling with food poverty, who may use the platform primarily as a means to access affordable food rather than as a source of esteem.

The findings suggest that, while the social image benefits of using food-sharing apps are significant, the direct impact on consumers' sense of esteem may be limited. This could be due to the perception that using such platforms is more about meeting basic needs rather than enhancing one's status or self-worth. Moreover, the stigma associated with needing assistance or using discounted services might counteract any potential esteem benefits that consumers could derive from using food-sharing apps.

While the findings do not provide a definitive answer on the relationship between esteem value and the perceived value of food-sharing apps, they highlight the complexity of consumer motivations and perceptions. Future research should explore this issue in greater depth, possibly by examining different demographic groups and contexts to better understand the nuanced ways in which esteem values interact with perceived value.

Enjoyment Value

The results of the present study support hypothesis H5, which proposed that the enjoyment value of food-sharing platforms is positively associated with customers' overall perceived value. The concept of enjoyment value, also referred to as "fun value," pertains to the intrinsic pleasure derived from engaging in food-sharing activities and the satisfaction gained from consuming redistributed food (Rajagopal and Kim, 2006). The findings indicate that food-sharing platforms, such as the Too Good To Go platform, which offers "magic boxes" of redistributed food, provide users with a sense of pleasure and curiosity. This enjoyment not only enhances the overall user experience but also encourages consumers to continue using the platform.

The autotelic nature of food-sharing activities can be seen as a form of entertainment for customers, adding an element of fun to the process of acquiring and consuming food. This positive and enjoyable experience increases the perceived value of the product, making customers more likely to remain loyal to the food-sharing platform. The enjoyment derived from these activities helps to mitigate any potential negative attitudes towards the perceived lower quality or suboptimal nature of redistributed food. By creating a pleasurable and satisfying experience, food-sharing platforms can strengthen their connection with users, ultimately leading to higher levels of continuous usage.

Furthermore, this positive reinforcement through enjoyment value is crucial in establishing a sustainable user base. Consumers who derive fun and satisfaction from their interactions with food-sharing platforms are more likely to overlook minor imperfections in the food products and focus on the overall positive experience. This shift in perception is essential for the success of food-sharing platforms, as it encourages repeat usage and enhances customer loyalty.

Perceived Risk

Hypotheses H7 and H9, which proposed a negative association between perceived risk and both satisfaction and continuous usage behavioural intention towards food-sharing platforms, were not supported by the findings of our empirical research. This unexpected result challenges the conventional belief in the literature that perceived risk is a detrimental value dimension. In this case, the perception of risk appears to be less significant for redistributed food.

One possible explanation for the lack of a significant negative influence of perceived risk on user satisfaction and behavioural intention is that consumers may have lower expectations for redistributed food, particularly suboptimal food purchased at a reduced price. Consumers could be more tolerant and cautious towards these foods, understanding that they may not have passed the initial quality selection process for various reasons. This lowered expectation may mitigate the impact of perceived risk on their overall satisfaction and intention to continue using the platform. Another explanation could be that consumers generally exercise caution by screening redistributed food before consumption to avoid stale or spoiled items. For example, users may check packaging and expiration dates to assess the freshness of food obtained through the OLIO platform, thus reducing the risk of consuming spoiled food. Similarly, food purchased through the Too Good To Go platform typically comes from offline physical restaurants, which

are likely to maintain higher standards of storage and hygiene, further alleviating concerns over perceived risk.

Additionally, it is possible that the inherent risk associated with consuming redistributed food is perceived differently by consumers who are motivated by sustainability and food waste reduction. These consumers might be more willing to accept minor risks in exchange for contributing to positive environmental impacts, which could explain the absence of a significant negative influence of perceived risk on satisfaction and continuous usage intention. While these potential explanations offer insights, the findings do not provide a definitive conclusion regarding the relationship between perceived risk and consumer behaviour on food-sharing platforms. Further research is needed to explore in greater depth how and to what extent consumers perceive risk when ordering food on food-sharing apps.

Perceived Value, Satisfaction, and Behavioural Intention

Hypotheses 6, 8, and 10 propose a clear pattern of relationships between perceived value, satisfaction, and continuous usage behavioural intention, with perceived value acting as the antecedent of satisfaction and behavioural intention as the final outcome. The results of this study strongly support these hypotheses, demonstrating that perceived value has a significant positive impact on users' satisfaction and their behavioural intention, while users' satisfaction also positively influences their continuous usage behavioural intention.

From the perspective of continuous usage literature, these findings expand the Expectation Confirmation Model (ECM) by proving that perceived value is a critical determinant of user satisfaction and continued engagement with a service. High perceived value enhances users' positive experiences, which leads to greater satisfaction. This satisfaction, in turn, translates into a stronger intention to continue using the service. Moreover, the concept of perceived value in this study encompasses multiple dimensions, including functional, emotional, social, and monetary values. When users perceive that a food sharing app offers substantial benefits across these dimensions, their overall satisfaction increases. This heightened satisfaction encourages users to continue engaging with the platform, as they perceive it to be worthwhile and beneficial. Therefore, enhancing perceived value through various strategies, such as improving service quality, offering competitive pricing, and fostering a sense of community, can significantly boost user satisfaction and continuous usage intention.

The positive relationship between satisfaction and continuous usage intention also underscores the importance of maintaining high levels of customer satisfaction. Satisfied users are more likely to exhibit repeat behaviour and spread positive word of mouth, contributing to the platform's growth and sustainability. This highlights the need for managers of food sharing apps to prioritise customer satisfaction by effectively addressing user needs and expectations. Additionally, the study's findings emphasise the role of perceived value in driving user behaviour. Perceived value not only directly influences satisfaction but also impacts continuous usage intention through satisfaction. This dual impact highlights the critical role of perceived value in shaping user experiences and behaviours on food sharing platforms.

5.6 Conclusion

This research explored the various dimensions of perceived value and their impact on user satisfaction and continuous usage intentions within the context of food sharing platforms. By developing and testing a comprehensive research model, the study examined how price value, performance value, social value, esteem value, and enjoyment value contribute to the overall perceived value of food sharing platforms, and how these perceptions influence user satisfaction and intentions to continue using these services. The findings confirmed that price value, performance value, social value, and enjoyment value significantly enhance the overall perceived value of food sharing platforms. These results highlight the importance of providing cost-effective, high-quality, socially beneficial, and enjoyable experiences to users.

Contrary to expectations, esteem value did not show a significant positive relationship with perceived value, suggesting that users prioritise social image and practical benefits over personal esteem when engaging with food sharing platforms. Furthermore, perceived risk did not significantly affect satisfaction or continuous usage intentions, indicating that users may be more tolerant of risks associated with redistributed food, particularly when driven by sustainability concerns and cost savings.

1. Theoretical Contributions

This study makes several theoretical contributions to the literature on perceived value, perceived risk, continuous usage in the IS domain, and digital sharing platforms. Firstly, it enriches the understanding of perceived value by validating the significant roles of price value, performance value, social value, and enjoyment value within the context of food sharing platforms. This validation offers a more comprehensive framework for assessing how these

dimensions collectively influence user perceptions and behaviours. Moreover, the findings challenge the conventional belief that perceived risk negatively impacts user satisfaction and behavioural intentions. This suggests that, in specific contexts such as food sharing platforms, perceived risk may not be as detrimental as previously thought, warranting further investigation into the nuanced effects of risk perception across different digital environments.

Secondly, the study extends the Expectation Confirmation Model (ECM) by integrating perceived value as a critical determinant of user satisfaction and continued engagement. This extension highlights that high perceived value significantly enhances user satisfaction, which, in turn, fosters continuous usage intentions. By doing so, the research provides a nuanced understanding of user retention mechanisms in the IS domain, emphasising the multifaceted nature of perceived value in driving user loyalty and sustained interaction with digital platforms. This theoretical advancement bridges a gap in the ECM by incorporating a broader spectrum of value dimensions, thereby offering a richer explanatory model for user behaviour in the digital economy.

Lastly, by examining food sharing platforms, this research adds to the expanding body of knowledge on digital sharing economy platforms. It underscores the importance of perceived value dimensions in shaping user experiences and behaviours, offering insights into how these platforms can enhance user engagement and sustainability. The study's findings provide actionable insights for the design and management of digital sharing platforms, emphasising the need to prioritise user-perceived benefits across various value dimensions. This contribution is particularly relevant as it aligns with the increasing emphasis on sustainability and resource optimisation in the digital economy. By elucidating the interplay between perceived value, user satisfaction, and continuous usage intentions, this research provides a robust theoretical foundation for future studies and practical applications aimed at optimising user engagement and platform sustainability.

2. Practical Implications

For practitioners, this study provides valuable insights into strategies to enhance user satisfaction and foster continuous engagement with food-sharing apps. To enhance price value, managers should prioritise offering substantial benefits, competitive pricing, and a strong value-for-money proposition. This could involve offering discounts, financial incentives, and promotions that appeal to price-sensitive consumers. It is equally important to ensure that

redistributed food maintains high standards of quality to boost performance value. This includes implementing stringent quality control measures, providing clear and transparent information about the food's origin and condition, and ensuring that products consistently meet or exceed customer expectations in terms of taste, freshness, and packaging.

Social value can be enhanced by effectively communicating the environmental and societal benefits of using the platform. Managers should actively promote the role of food-sharing apps in reducing food waste, addressing food poverty, and supporting sustainability. This can be done through targeted marketing campaigns, collaborations with environmental organisations, and user testimonials. Highlighting the positive impact of food sharing on both the community and the environment can increase the platform's appeal, especially among socially conscious consumers.

To improve enjoyment value, it is critical to create a pleasurable and satisfying user experience. This entails creating an accessible and user-friendly interface, ensuring that the ordering process is smooth, and incorporating engaging and interactive features. Managers could also consider integrating gamification elements, rewards programmes, and personalised recommendations to make the experience more enjoyable and keep users engaged. Ensuring that food-sharing activities are perceived as fun and rewarding will significantly boost user satisfaction and encourage continuous usage.

By addressing these dimensions comprehensively, food-sharing platforms can enhance user satisfaction and continuous usage intentions, ultimately leading to greater customer loyalty and sustainable growth. These strategies not only improve the overall user experience but also help foster a stronger emotional connection with the platform, encouraging users to return and recommend it to others. In turn, this can lead to a more robust and engaged user base, driving long-term success and contributing to the broader goals of sustainability and social responsibility.

3. Limitations and Future Research

Although this study offers important insights into the factors affecting user satisfaction and intentions for continued use of food-sharing platforms, it also has limitations that should be considered in future research. Firstly, the study's sample was limited to users of food-sharing platforms in the UK, which may affect the generalisability of the findings. Expanding the

sample to include users from diverse geographical locations and socio-economic backgrounds could provide a broader understanding of user behaviour in different contexts. Additionally, while the study examined various dimensions of perceived value, it did not explore the specific factors that influence risk perception in depth. Future research should investigate these factors more thoroughly and examine how they interact with consumer expectations and motivations in the context of food sharing. Understanding the subtle role of perceived risk and its influence on user satisfaction and intentions for continued use could offer valuable insights for developing strategies to mitigate these risks and enhance user engagement.

Moreover, subsequent research could examine the long-term impacts of perceived value and risk on user loyalty and platform sustainability. Investigating how these perceptions evolve over time and their influence on user retention and advocacy could provide a deeper understanding of the drivers of sustained user engagement. Additionally, the role of emotional factors, such as user trust and the sense of community fostered by food-sharing platforms, could be explored to provide a more holistic perspective on user behaviour. In conclusion, while this study contributes significantly to understanding user behaviour on food-sharing platforms, numerous opportunities for future research could expand on these findings By tackling the constraints and investigating new aspects of perceived value and risk, future studies can provide a more thorough and nuanced understanding of user engagement in the sharing economy.

Chapter 6. Evaluation Framework for Food Sharing Platforms

6.1 Evaluation Framework

This chapter integrates findings from the literature review and empirical studies to develop an evaluation framework for food-sharing platforms. It synthesizes the key factors influencing adoption and long-term engagement, offering practical recommendations for platform developers and policymakers.

6.1.1 Literature Review and Identification of Research Gaps

The first step in this evaluation framework involves conducting a comprehensive review of existing literature on food-sharing platforms. This review synthesises current knowledge, identifies prevalent research topics, and highlights critical gaps in the field. By consolidating findings from previous studies, the literature review offers a solid foundation for comprehending both the obstacles and possibilities present within the food-sharing ecosystem. This phase guarantees that the framework is based on a comprehensive understanding of the current landscape, helping to pinpoint areas that require further exploration and improvement for more effective platform development and use.

Mainstream Research Topics

1. Acceptance of Food Sharing Platforms

Acceptance of food-sharing platforms is shaped by several critical factors that influence user perceptions and adoption. The literature highlights the importance of perceived usefulness, ease of use, and social influence as key determinants. Understanding these factors is essential for designing platforms that not only attract users but also encourage their long-term engagement. The easier and more beneficial users perceive the platform to be, the more likely they are to adopt it and integrate it into their routine. Social influence also plays a role, as recommendations and endorsements from friends, family, or communities can significantly affect users' willingness to engage with food-sharing platforms.

However, there are notable barriers to adoption that must be addressed to increase user participation. Concerns about food quality and safety are among the most common issues raised by potential users. Questions about the freshness and origin of redistributed food can create hesitation. Logistical challenges, such as inconvenient pick-up times and locations, further

discourage adoption, as users may find it difficult to fit platform usage into their schedules. Additionally, a lack of awareness or understanding of how these platforms operate can prevent potential users from engaging with them. Overcoming these barriers through improved user education, better logistics, and assurances of food safety is crucial for driving higher adoption rates and fostering user confidence in food-sharing platforms.

2. Continuous Usage and User Engagement:

Continuous usage and user engagement with food-sharing platforms are critical for their long-term success, as initial adoption does not necessarily translate into sustained usage. Continuous engagement is largely dependent on several factors, including the consistency of food quality, overall user satisfaction, and the perceived value of the service. Ensuring that these elements are consistently met is essential for retaining users and encouraging ongoing participation. If users perceive that the food quality is unreliable or that the platform fails to meet their expectations, they are less likely to remain engaged in the long term.

Several key factors influence continuous usage and engagement. Performance value, which relates to the quality and reliability of the food offered, plays a major role in shaping users' willingness to continue using the platform. Price value, or the cost-effectiveness of the service, also drives engagement, as users seek affordable solutions that provide value for money. Social value is another important factor, as food-sharing platforms often enhance users' social image and foster a sense of community belonging, both of which can encourage ongoing participation. Lastly, enjoyment value, or the pleasure derived from using the platform, can make the experience more rewarding, further boosting user satisfaction and loyalty. Understanding and enhancing these factors are essential for developing strategies that improve user engagement and promote the long-term success of food-sharing platforms.

3. Impact on Food Waste Reduction

The impact of food-sharing platforms on food waste reduction is notable, as these platforms facilitate the redistribution of surplus food, helping to minimise food waste. Their effectiveness, however, varies depending on how well they connect food providers with recipients and the volume of food successfully redistributed. Platforms that efficiently match surplus food to those in need or who value it, and that operate at a large scale, tend to have a more substantial impact on reducing food waste. The ease of use, reliability, and logistics behind the

redistribution process also affect the overall success of food-sharing platforms in achieving their waste-reduction goals.

Despite the apparent benefits, there are significant challenges in accurately measuring the impact of these platforms on food waste reduction. One key issue is the lack of a unified definition of food waste, which leads to inconsistencies in how waste is categorised and reported. Additionally, varying data collection methods across different platforms and regions further complicate efforts to evaluate their effectiveness. The absence of standardised metrics for measuring redistributed food or the amount of waste saved hinders the ability to make reliable comparisons or assess the platforms' true impact. Therefore, establishing consistent measurement practices and definitions is crucial for accurately assessing and improving the contribution of food-sharing platforms to minimising food waste.

4. Social and Economic Benefits

Food-sharing platforms offer notable social and economic benefits that extend beyond their primary goal of reducing food waste. One of the key social advantages is community building. By connecting individuals, local businesses, and organisations committed to sustainability, these platforms foster a sense of belonging and shared purpose. This social engagement strengthens user participation and can enhance long-term involvement, as users feel part of a larger collective effort to address food waste. The sense of community that develops around these platforms not only promotes environmental awareness but also creates opportunities for social interaction, collaboration, and mutual support.

On the economic side, food-sharing platforms provide significant incentives by offering access to free or low-cost food, which can be particularly appealing to users seeking to reduce their grocery expenses. For individuals facing financial constraints or those who value cost-effectiveness, the economic benefits of these platforms are a strong motivator. By effectively communicating these advantages, such as highlighting the savings potential or offering transparency about the economic gains, platforms can attract a broader audience and encourage sustained usage. Both the social and economic benefits, therefore, play an essential role in engaging users and ensuring the continued growth and success of food-sharing platforms.

5. Technological and Logistical Considerations:

Food sharing platforms involve several key technological and logistical considerations that play a crucial role in their overall success. Firstly, platform usability is a significant factor in user adoption and retention. An accessible interface, seamless navigation, and straightforward functionality are critical to ensuring that users can easily engage with the platform. Platforms that are accessible and provide users with straightforward instructions are more likely to see continuous engagement and satisfaction. Additionally, logistical efficiency is essential in the successful operation of food-sharing platforms. Ensuring that food pickups and deliveries are well-coordinated, with convenient pickup times and easily accessible locations, can greatly enhance the user experience. Addressing logistical challenges is crucial for maintaining user satisfaction and encouraging long-term participation.

6. Business Models and Operational Mechanisms:

When it comes to business models and operational mechanisms, the literature has explored various approaches that food-sharing platforms can adopt. Business models such as donation-based, subscription-based, and pay-per-use models each have their own advantages and limitations. Understanding the specific needs of the platform's target audience and its operational capabilities is key to selecting an appropriate model. Additionally, the operational mechanisms of these platforms, such as the management of food supply chains and the development of partnerships with food providers, are critical for efficient food distribution. Implementing streamlined systems that facilitate the flow of surplus food from providers to users is necessary for achieving operational success.

7. Interconnectedness and Multistakeholder Collaboration:

The interconnectedness and collaboration between multiple stakeholders also emerge as central themes in the literature. Successful food-sharing platforms often involve the participation of various stakeholders, including food providers, non-profits, government agencies, and end-users. This collaborative approach enhances the platform's reach, impact, and sustainability. Building strong partnerships and networks ensures that resources are used effectively and that the platform can operate on a larger scale. Effective collaboration helps food-sharing platforms achieve their strategic goals, making the platforms more impactful in terms of reducing food waste and fostering community involvement.

This literature review outlines the major themes in research on food-sharing platforms, identifying key areas such as technological usability, logistical efficiency, business models, operational mechanisms, and the importance of collaboration. By addressing the gaps identified in these areas, the development of an evaluation framework can enhance the effectiveness and sustainability of food-sharing platforms, ultimately contributing to the reduction of food waste.

6.1.2 Qualitative Analysis - Technology Acceptance (Study 1)

The second stage involves qualitative research to investigate the elements affecting consumer acceptance of food sharing platforms. Employing the UTAUT2 as a theoretical framework, semi-structured interviews are carried out with consumers. These interviews provide in-depth insights into user experiences and perceptions. Key findings are categorised into eight major factors:

Food Accessibility: Concerns related to pickup time and location, reflecting the importance of logistical convenience (Facilitating Conditions).

Performance Expectancy: Includes sustainable performance in reducing food waste and practical issues such as food quantity, quality, and availability.

Ease of Use and Communication: Highlights the need for user-friendly platforms and effective information dissemination (Effort Expectancy).

Hedonic Motivation: The enjoyment and satisfaction derived from using the platform.

Economic Benefit: Financial advantages and cost savings (Price Value).

Social Influence: The impact of societal and peer pressure on adoption.

Emotions Factors: Adverse feelings or discomfort associated with platform use.

Risk Factors: Personal safety and food hygiene issues.

The thematic analysis of interview data provides a detailed understanding of these factors, offering actionable insights to enhance user acceptance.

6.1.3 Quantitative Analysis - Continuous Usage (Study 2)

The third stage uses quantitative methods to examine factors influencing the continuous usage of food sharing platforms. Questionnaires are distributed to a large sample of users to collect data on perceived value, perceived risk, user satisfaction, and continuous usage intentions. Key findings include:

Price Value: The importance of offering substantial benefits at reasonable prices.

Performance Value: High standards of food quality that meet or exceed customer expectations.

Social Value: Enhancing users' self-image and social perceptions through positive environmental impacts.

Enjoyment Value: Providing pleasurable and satisfying user experiences.

Perceived Risk: Addressing safety and quality concerns to mitigate negative impacts on satisfaction.

Statistical analysis, including descriptive and inferential statistics, identifies relationships and patterns among these variables, providing a comprehensive view of what drives long-term engagement with food sharing platforms.

6.1.4 Integration and Evaluation Framework Development

The final stage involves integrating findings from the qualitative and quantitative analyses to develop a comprehensive evaluation framework. The implementation of this framework in real-world settings allows continuous monitoring and improvement of platform effectiveness, contributing to reduced food waste and the achievement of sustainable development goals.

Table 20. Evaluation Framework for Food Sharing Platforms

Stage	Indicator Category	Indicator	Description	Action Required
Technology Acceptance	Food Accessibility	Pickup Time	Convenience related to the time required for picking up shared food.	Optimise pickup times to match user availability.
		Pickup Location	Ease of accessing the location for food pickup.	Ensure pickup locations are easily accessible and well-marked.
	Performance Expectancy	Sustainable Performance	Perceived benefits in reducing food waste and alleviating food poverty.	Highlight sustainable benefits in marketing and user communications.
		Food Performance	Issues related to food quantity, quality, variety, and consistency.	Standardise food quality and ensure consistent portions.
	Ease of Use	Application Usability	Simplicity and user-friendliness of the platform.	Continuously improve the user interface and experience.
	Information Availability	Feedback Response	Effectiveness of the platform in providing necessary information and handling user feedback.	Enhance communication channels and ensure timely responses.
	Hedonic Motivation	Fun/Pleasure	Enjoyment and satisfaction derived from using the platform.	Create engaging and fun user experiences.
	Economic Benefit	Cost-Effectiveness	Financial advantages and cost savings for users.	Emphasise economic benefits in marketing strategies.
	Social Influence	Family and Friends Influence	Impact of recommendations from family and friends on user adoption.	Encourage referrals and leverage social proof in marketing.
	Emotion Factors	Negative Feelings	Adverse feelings or discomfort associated with using the platform.	Address and mitigate negative user experiences.

	Risk Factors	Personal Safety	Concerns about personal safety when using the platform.	Implement safety measures and communicate them effectively to users.
		Food Safety	Concerns about the safety and hygiene of shared food.	Ensure strict food safety standards and regular quality checks.
Technology Continuous Use	Perceived Value	Price Value	The financial value users perceive from using the platform.	Offer competitive pricing and highlight cost benefits.
		Performance Value	The perceived quality and performance of redistributed food.	Maintain high food quality standards and ensure consistency.
		Social Value	Enhancing users' self-image and social perceptions through positive environmental impacts.	Promote social and environmental benefits to enhance user perception.
		Enjoyment Value	The intrinsic pleasure derived from using the platform.	Create enjoyable and satisfying user experiences.
	Perceived Risk	Safety and Quality Concerns	Concerns about potential risks associated with using the platform.	Address safety and quality concerns through transparent communication and quality control.
	User Satisfaction	Overall Satisfaction	The overall satisfaction of users with the platform.	Continuously monitor and improve user satisfaction levels.
	Continuous Usage Intention	Behavioural Intention	Users' intention to continue using the platform.	Implement strategies to retain users and encourage repeat usage.

6.2 Discussion

This section synthesizes the key findings of the study and situates them within the broader academic discourse on digital platforms, food waste reduction, and sustainability. By employing a mixed-methods approach, incorporating both qualitative and quantitative analyses, this research provides a comprehensive examination of the factors influencing the adoption and sustained use of food-sharing platforms in UK. The findings yield critical insights with both theoretical and practical implications, informing the development of effective strategies for platform developers and policymakers. Specifically, the study contributes to the growing body of literature on digital food-sharing ecosystems by elucidating the interplay between economic, social, and psychological drivers of user engagement.

Qualitative Analysis - Technology Acceptance

The qualitative component of this research examines the key elements influencing consumer acceptance of food-sharing platforms. Grounded in the UTAUT2 theoretical framework, semi-structured interviews were conducted to gain a deeper understanding of user experiences and perceptions. This methodological approach allows for a nuanced exploration of the factors shaping consumer engagement and decision-making processes. The analysis of interview data reveals eight major factors that significantly impact user adoption of these platforms, offering valuable insights into the underlying motivations and barriers influencing participation in food-sharing initiatives.

Food Accessibility

Food accessibility plays a crucial role in the adoption of food-sharing platforms, with factors such as pickup time and location emerging as key determinants of user engagement. The findings indicate that restricted or inconvenient pickup schedules deter participation, whereas strategically located and easily accessible pickup points enhance user convenience and encourage continued usage. These results are consistent with prior research, including Yamabe-Ledoux et al. (2023), which underscores the significance of operational convenience in fostering consumer engagement with food-sharing platforms in Japan. Beyond logistical considerations, this study extends the understanding of Facilitating Conditions within the UTAUT2 framework by highlighting the psychological reassurance that predictable and accessible collection routines provide to users.

Performance Expectancy

Performance expectancy, encompassing both sustainability and food performance, emerged as a critical determinant of user engagement with food-sharing platforms. Users were primarily motivated by the perception that these platforms effectively contribute to reducing food waste and alleviating food insecurity, reinforcing the role of digital solutions in promoting environmental and social sustainability. This aligns with Ciulli et al. (2020), who emphasized the transformative potential of digital platforms in fostering sustainable consumption behaviors. Furthermore, our findings on food performance are consistent with Haas et al. (2022), who highlighted the importance of practical and perceived food quality in shaping consumer trust. This study advances the understanding of performance expectancy by integrating both sustainability and food performance dimensions. While sustainability considerations drive user motivation by highlighting the environmental and social benefits of food-sharing platforms, food performance ensures that users perceive redistributed food as safe, high-quality, and reliable. The interplay between these factors is crucial, as users are more likely to engage with and continue using these platforms when they simultaneously contribute to sustainability goals and receive satisfactory food quality. Therefore, achieving a balance between sustainability impact and consistent food performance is essential for fostering user trust and engagement.

Ease of Use

Ease of use and the availability of clear, accessible information are fundamental to fostering user engagement with food-sharing platforms. A well-designed, user-friendly interface coupled with reliable communication channels significantly enhances adoption rates, reinforcing findings from Fuentes et al. (2021) on the role of app-based food management tools in promoting user interaction. Similarly, Haas et al. (2022) underscore the necessity of intuitive interface design to facilitate efficient information exchange, ensuring that users can easily navigate platform functionalities and access essential details. This study further highlights the importance of dynamic communication tools that provide real-time updates, thereby enhancing user trust and engagement. Our findings suggest that the integration of adaptive, interactive features can optimize the user experience, reduce friction in platform interactions, and ultimately drive engagement with food-sharing initiatives.

Hedonic Motivation

Hedonic motivation plays a pivotal role in shaping user engagement, primarily through the excitement and curiosity generated by surprise food boxes and the novelty of participation. Hua et al. (2023) demonstrated that perceived playfulness significantly influences platform

adoption, a finding that aligns with our study's recognition of curiosity-driven engagement. Our research builds upon these insights by highlighting curiosity about surplus food as a central driver of user involvement, emphasizing that the unpredictability and sense of discovery associated with food-sharing platforms enhance user satisfaction and retention. These findings suggest that platforms can strategically incorporate gamification elements, surprise offerings, and interactive features to sustain user interest and foster long-term engagement.

Price Value

Price value emerged as a significant determinant of platform usage, with cost savings from discounted or free food serving as a primary incentive for user engagement. This finding is consistent with Magno and Cassia (2024), who identified economic benefits as a crucial driver of sustained platform use. Similarly, Yamabe-Ledoux and Hori (2023) emphasized price consciousness as a key motivator, reinforcing the notion that affordability remains a central factor in consumer decision-making. Beyond the immediate financial benefits, this study highlights the role of perceived fairness in pricing structures in shaping long-term participation. Transparent pricing practices not only enhance consumer trust but also foster a sense of loyalty, ensuring that users continue engaging with food-sharing platforms over time. By balancing affordability with fairness, platforms can strengthen user retention.

Social Influence

Social influence emerged as a crucial factor in driving platform adoption, particularly through recommendations from family and friends. Positive experiences shared within social circles significantly increased user uptake, reinforcing the findings of Schanes and Stagl (2019) on the impact of social norms in promoting sustainable consumption. Additionally, the work of Schanes and Stagl (2019) and Mazzucchelli et al. (2021) underscores the importance of community support and social networks in encouraging user participation, aligning with our study's findings on the role of peer recommendations. This research further highlights the growing significance of digital community features, such as in-app forums and social sharing functionalities, in fostering communal bonds and enhancing engagement with food-sharing platforms.

While this study confirms the relevance of the UTAUT2 framework in explaining user adoption behaviors in emerging food-sharing platforms, it also identifies additional critical factors shaped by the distinct characteristics of these platforms. The integration of food exchange with

strong sustainability objectives adds a layer of complexity to adoption determinants. Although the UTAUT2 framework captures a substantial portion of the variance in adoption and usage behaviors, it does not account for individual characteristics and user dispositions, which have been shown to play a crucial role in technology acceptance (Dwivedi et al., 2019). By incorporating insights from qualitative interviews, this research extends the UTAUT2 model by introducing two additional constructs that reflect user dispositions: Risk Factors and Emotional Factors. These elements offer a more nuanced understanding of adoption decisions by considering users' perceptions of food safety, trust, and emotional responses. By acknowledging these psychological and affective dimensions, this study enhances the explanatory power of the UTAUT2 framework and provides a more comprehensive model for understanding engagement with food-sharing platforms.

Risk Factors

Risk factors encompass users' concerns regarding safety, hygiene, and trust in the platform, which are particularly significant in the context of food-sharing. While the original UTAUT2 framework includes Facilitating Conditions that account for organizational and technical support, Risk Factors extend this model by addressing perceived safety risks—a critical determinant influencing both adoption and continued use of food-sharing platforms. The integration of Risk Factors enhances the explanatory power of UTAUT2 by recognizing that even with adequate technological infrastructure, concerns about food safety and hygiene may still serve as significant barriers to user engagement.

These concerns serve as a direct negative predictor of both Behavioural Intention and Use Behaviour, as users may be reluctant to engage with food-sharing platforms if they perceive a risk to their health or well-being. Unlike constructs such as Perceived Usefulness or Effort Expectancy, Risk Factors represent a distinct and context-specific barrier to adoption that requires targeted intervention. Addressing these concerns is essential to improving trust and fostering user confidence, particularly in technology-mediated food-sharing environments where direct control over food quality is limited.

Our findings align with Ciulli et al. (2020), who emphasized the need for transparent and reliable information to mitigate safety concerns and build consumer trust. This study further contributes to the literature by identifying trust in the platform’s regulatory practices as a key moderating factor—suggesting that clearly communicated safety standards and robust

verification mechanisms can alleviate user apprehension. By incorporating Risk Factors into the UTAUT2 framework, this study broadens its applicability to the sharing economy and food-related digital technologies, underscoring the necessity of addressing context-specific risks to enhance user adoption and sustained engagement.

Emotional Factors

Emotional factors encompass the psychological responses and affective experiences that influence user engagement with food-sharing platforms. These factors may manifest as anxiety, discomfort, or embarrassment, elements often overlooked in traditional technology acceptance models. While the UTAUT2 framework accounts for Hedonic Motivation—emphasizing the enjoyment derived from platform use—Emotional Factors capture the negative psychological barriers that may deter participation. Our findings indicate that feelings of embarrassment, particularly when collecting surplus food from public locations such as restaurants, can serve as a significant adoption barrier. This observation aligns with Harvey et al. (2020), who examined reciprocity dynamics in food-sharing networks and found that participants tend to adopt singular roles as either donors or recipients, rather than engaging in bidirectional exchange. This shift in perception suggests that some recipients may experience discomfort in their role, particularly in social environments where food-sharing is framed as an act of charity rather than a mutual exchange. The evolving motivations driving participation in food-sharing platforms underscore the need to address these emotional concerns to enhance user engagement and normalize participation.

The integration of Risk Factors and Emotional Factors enhances the adaptability of the UTAUT2 model, making it more applicable to industry-specific contexts such as food-sharing platforms, where safety and emotional concerns are pivotal in shaping user decision-making. Traditional UTAUT2 constructs, including Performance Expectancy and Effort Expectancy, do not fully encapsulate these sector-specific challenges. By addressing this gap, the revised framework offers a more comprehensive analytical tool for understanding technology adoption across diverse domains. Moreover, these additional constructs significantly enhance the model's predictive capacity. Recognizing that both risk and emotional concerns exert substantial influence over user behaviour, the expanded framework provides deeper insights into variations in Behavioural Intention and Use Behaviour. This is particularly relevant in contexts where trust, safety, and psychological responses are central to user engagement. By acknowledging the interplay of external and psychological factors alongside functional

considerations, this research extends the broader literature on technology acceptance, demonstrating that cognitive and affective dimensions are integral to technology adoption.

Quantitative Analysis - Continuous Usage

The quantitative component of this research investigates the key factors influencing consumers' continuous engagement with food-sharing platforms. Utilizing a structured data analysis approach, this study examines the role of price value, performance value, social value, and enjoyment value in shaping user behaviour. By integrating insights from existing theoretical frameworks, this research provides a comprehensive evaluation of the factors that drive long-term participation in food-sharing initiatives. The findings reveal that these four dimensions play a critical role in determining user retention, highlighting the interplay between economic incentives, quality expectations, social influences, and hedonic engagement.

Price Value

This study establishes a strong positive relationship between price value and the overall perceived value of redistributed food, reinforcing previous findings that suboptimal foods offered at reduced prices are generally well received. This aligns with the research of Yamabe-Ledoux and Hori (2023), who identified price consciousness as a significant driver of consumer participation in Japanese food-sharing platforms, highlighting the broader relevance of economic incentives across diverse cultural and geographical contexts. The results underscore the necessity for food-sharing apps to provide tangible benefits, competitive pricing, and a clear value proposition to positively shape consumer attitudes. Specifically, offering larger portions and preferential pricing structures enhances users' perceived price value, which, in turn, influences their behavioural intentions and contributes to the efficiency of food redistribution cycles.

Performance Value

Performance value, which reflects the extent to which a product's quality meets or exceeds consumer expectations, emerged as a significant determinant of perceived value. This finding aligns with prior studies, such as Sara et al. (2018), which identify performance value as a key contributor to overall perceived value. Our results indicate that consumers associate high-quality redistributed food with attributes such as appealing appearance, intact packaging, and well-known brands. Consequently, maintaining consistent product quality is essential for food-

sharing platforms to enhance user satisfaction and foster long-term engagement. The significance of performance value in digital platforms has also been emphasized by Ciulli et al. (2020), who highlight that reliability and quality perception are crucial in establishing trust and encouraging repeat usage. Our study builds upon this perspective by demonstrating that consumers who consistently experience high performance value are more likely to develop trust in the platform and establish habitual engagement. Ensuring that redistributed food meets consumer expectations not only strengthens trust but also enhances platform sustainability by promoting continuous user participation.

Social Value

The findings demonstrate that social value plays a significant role in shaping the perceived value of redistributed food, receiving strong empirical support. Consumers perceive food-sharing platforms not only as practical tools for accessing surplus food but also as mechanisms for enhancing their self-image and reinforcing positive social impressions. This aligns with existing research, such as Kim and Lee (2017), which highlights the role of food consumption choices in signaling social status and group affiliation. This aligns with Schanes and Stagl (2019), who identified social connections and community engagement as key motivators for participation in food-sharing activities, emphasizing that users often seek to demonstrate their environmental and social responsibility. When individuals develop a sense of community and social belonging through these platforms, their commitment to continued use is reinforced. This suggests that fostering a strong sense of community and promoting the broader social and environmental benefits of food-sharing can enhance platform engagement and long-term participation.

Enjoyment Value

The findings confirm a strong positive relationship between enjoyment value and perceived value, underscoring the significance of intrinsic pleasure in enhancing user satisfaction and promoting continuous usage of food-sharing platforms. This aligns with Rajagopal and Kim (2006), who demonstrated that enjoyable experiences foster deeper consumer engagement and long-term platform loyalty.

A key driver of enjoyment value in food-sharing platforms is the element of surprise, particularly in services like Too Good To Go, which offers "magic boxes" of surplus food. This unpredictability fosters excitement and curiosity, creating a rewarding and novel consumer

experience that encourages sustained use. Hua et al. (2023) further emphasize the role of perceived playfulness in boosting consumer engagement with surplus food apps, reinforcing the importance of hedonic motivation in driving participation.

Beyond immediate gratification, enjoyment value fosters positive emotional associations with the platform, making users more likely to develop habitual engagement. By leveraging playful and interactive experiences, food-sharing platforms can strengthen user retention and ensure long-term participation, positioning enjoyment value as a critical component of consumer engagement strategies.

Perceived Risk

The results did not support the anticipated negative relationship between perceived risk and user satisfaction or continuous usage intention, challenging conventional assumptions that risk perceptions deter engagement. The findings suggest that consumers may adjust their quality expectations when engaging with redistributed food, particularly when aware of its discounted nature. Furthermore, the perception of contributing to environmental sustainability appears to mitigate concerns about potential risks. Ciulli et al. (2020) similarly observed that consumers tend to be more tolerant of perceived risks when engaging in environmentally beneficial practices, indicating that altruistic motivations can override safety concerns. In the context of continuous usage, perceived risk can function as a moderating factor; when trust in the platform is strong, concerns regarding risk are diminished, fostering sustained engagement.

This study further explored the interrelationships between perceived value, satisfaction, and continuous usage intention, all of which were strongly supported. The findings indicate that perceived value plays a pivotal role in enhancing user satisfaction, which in turn positively influences continuous usage intentions. These insights extend the Expectation Confirmation Model (ECM), underscoring the necessity of delivering perceived value across functional, emotional, social, and monetary dimensions. This aligns with the work of Magno and Cassia (2024), who identified perceived value as a key determinant of consumer loyalty in digital food-sharing applications. When users consistently perceive a food-sharing platform as beneficial, they are more likely to maintain active engagement over time.

In summary, this research provides a comprehensive examination of the factors shaping consumer engagement with food-sharing platforms. By affirming the significance of price,

performance, social, and enjoyment value, while also investigating the nuanced roles of risk and esteem value, the study offers practical implications for platform developers. Ensuring consistent product quality, optimizing pricing models, and enhancing both social and hedonic dimensions of user experience can significantly promote long-term participation. Additionally, these findings contribute to the broader literature by illuminating the complex interplay between various value dimensions and their influence on consumer behaviour in digital food-sharing ecosystems. The synthesis with prior research highlights the widespread applicability of these factors across different contexts, reinforcing the importance of holistic and user-centric approaches to platform design and management. Understanding how these determinants shape continuous usage intention provides valuable insights for sustaining long-term user engagement and ensuring the scalability of food-sharing initiatives.

6.3 Conclusion

The comprehensive evaluation framework developed for food-sharing platforms offers a thorough and multifaceted approach to enhancing their effectiveness and sustainable performance. Grounded in extensive qualitative and quantitative research, this framework addresses the critical factors influencing both user acceptance and continuous usage of food-sharing platforms, providing a structured pathway for ongoing assessment and improvement.

The literature review forms the foundation of this framework, synthesising existing knowledge to highlight mainstream research topics and critical gaps. It identifies significant themes such as user perceptions and adoption barriers, sustained user engagement, impact on food waste reduction, social and economic benefits, technological and logistical considerations, business models and operational mechanisms, and the importance of interconnectedness and multistakeholder collaboration. Despite the promising potential of food-sharing platforms, the review emphasises the need for standardised impact measurement, innovative technological solutions, and effective strategies to overcome adoption barriers and logistical challenges.

Qualitative analysis, primarily through semi-structured interviews, provides rich, nuanced insights into user experiences and perceptions. Thematic analysis identifies eight major factors influencing technology acceptance: food accessibility, performance expectancy, ease of use, hedonic motivation, economic benefit, social influence, negative emotions, and safety concerns.

These factors are crucial in understanding user behaviour and preferences, offering a detailed picture of the elements that encourage or hinder platform adoption.

Quantitative analysis, involving the distribution of questionnaires and statistical analysis, highlights key factors influencing continuous usage. These include perceived value, encompassing price, performance, social, and enjoyment dimensions, as well as perceived risk, user satisfaction, and behavioural intention. The findings suggest that users prioritise economic and social benefits, consistent food quality, and engaging experiences. By understanding these dimensions, platforms can better address user needs and enhance long-term engagement.

Integrating these qualitative and quantitative insights, the evaluation framework identifies critical indicators for assessing food-sharing platforms. These indicators, categorised into user acceptance and continuous usage factors, form the basis for robust assessment tools. These tools include user surveys, feedback mechanisms, quality control reports, engagement metrics, and statistical methods, ensuring comprehensive and data-driven evaluations.

The framework offers practical guidelines for platform managers to enhance user engagement and sustainable performance. These guidelines emphasise the importance of improving logistical convenience, ensuring consistent food quality, simplifying user interfaces, fostering community support, and addressing safety concerns. Implementing these recommendations can lead to significant improvements in user satisfaction and platform effectiveness, promoting more efficient food redistribution.

The real-world application of the framework facilitates continuous monitoring and iterative improvement. Establishing a feedback loop is crucial, allowing for regular collection and analysis of user feedback to ensure platforms evolve in line with user needs and expectations. This dynamic process enables prompt resolution of identified issues and leverages existing strengths, contributing to the platforms' ongoing enhancement.

Ultimately, this evaluation framework aligns with broader sustainable development goals. By promoting sustainable consumption and production, addressing food security, and contributing to climate action, the framework supports significant reductions in food waste. The efficient redistribution of surplus food not only mitigates environmental impact but also fosters social

and economic sustainability. By optimising the influence of food-sharing platforms, the framework aids in developing a more sustainable and equitable food system.

In conclusion, the comprehensive evaluation framework developed through this research offers a robust tool for assessing and improving food-sharing platforms. By addressing critical research gaps and providing practical, evidence-based guidelines for continuous improvement, the framework enables these platforms to enhance their effectiveness and contribute significantly to sustainable development. The ongoing application and refinement of this framework will be essential in realising the full potential of food-sharing platforms, ensuring they effectively reduce food waste and promote a sustainable future.

6.3.1 Theoretical Contributions

In the context of food-sharing platforms, where sustained user participation is critical to addressing both food waste and food poverty, understanding not only why users adopt these platforms but also what motivates them to continue using them over time is paramount. This research makes several significant theoretical contributions to the study of food-sharing platforms and the broader discourse on sustainability and digital technologies. By drawing on insights from multiple academic disciplines, including sustainability, technology adoption, and behavioural science, and applying them to the emerging field of digital food redistribution, this study advances theoretical understanding in several key areas. In particular, it addresses a gap in the existing literature by integrating technology acceptance with continuous usage—a combination that is essential for the long-term success of digital platforms.

1. Integration of Technology Acceptance and Continuous Usage

One of the key theoretical contributions of this study is the integration of technology acceptance and continuous usage into a unified theoretical framework. This combination has rarely been addressed comprehensively in the existing literature, where previous studies often focus on either technology acceptance or continuous usage as separate constructs (Cheng, 2019; Limayem et al., 2007; Ooi et al., 2018; Hossain et al., 2019; Tam et al., 2020). Traditional models have predominantly emphasised initial user acceptance, examining how individuals decide to adopt new technologies. However, for digital platforms, particularly in the context of food-sharing platforms, long-term success hinges on securing both initial adoption and sustained user engagement over time.

The current research addresses this gap by examining both phases—initial acceptance and continuous usage—within a single integrated framework. This approach provides a more nuanced and complete understanding of user behaviour, recognising that the challenges do not end with securing initial interest. This integration is especially important in the context of food-sharing platforms, where the long-term impact on sustainability and food redistribution depends on retaining users after their initial interaction. The research underscores the real-world need for platforms to not only attract users but also keep them engaged over time. The notion of continuous usage goes beyond the one-time adoption of technology and delves into factors that encourage users to return and consistently engage with the platform. It reflects the real-world dynamics of digital platforms that rely on repeated interactions, highlighting the importance of user retention for the viability and impact of the platform.

By incorporating continuous usage alongside technology acceptance, this research provides a thorough perspective on the full lifecycle of user interaction with digital platforms—from initial adoption through to long-term engagement. This dual focus is crucial for understanding how digital platforms can succeed in the sharing economy and in contexts where sustainability goals are central to the platform's mission. For instance, food-sharing platforms must create value for users not only in terms of accessibility and convenience but also in terms of trust, emotional satisfaction, and the platform's alignment with users' ethical and environmental values. Without understanding the factors that drive both initial adoption and ongoing use, platforms may struggle to achieve their long-term objectives.

In essence, this research bridges a critical gap in the current body of literature providing a holistic framework that captures the dual challenges of technology adoption and sustained usage. The knowledge acquired from this integrated approach can be applied to a range of digital platforms, particularly those operating in socially-driven and sustainability-focused domains, where long-term user engagement is crucial for delivering meaningful outcomes. This contribution deepens the theoretical understanding of user behaviour and offers practical guidance for platform designers and managers aiming to create lasting, impactful digital solutions in the sharing economy.

2. Extension of the UTAUT2 Framework

A central theoretical contribution of this research is the expansion of the UTAUT2 model through the introduction of two new constructs: Risk Factors and Emotional Factors. The UTAUT2 model has been extensively employed to elucidate technology acceptance by focusing on constructs such as Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. However, in the specific context of food-sharing platforms, additional factors are at play that the standard UTAUT2 model does not capture adequately.

The inclusion of Risk Factors, which refer to user concerns about food safety, hygiene, and personal security, directly addresses the unique challenges of food-sharing platforms, where these concerns are paramount. The Risk Factors construct extends the Facilitating Conditions construct by recognising that users' concerns about the safety and reliability of food exchanges are distinct from infrastructural or technical support. For example, even if a platform has a user-friendly interface and adequate logistical support, individuals may hesitate to adopt or continue using it if they are worried about the safety of the food they are receiving. By integrating Risk Factors into the UTAUT2 framework, this research adds a new dimension to the model, making it more applicable to contexts where trust and safety play a crucial role in influencing user behaviour.

Emotional Factors further expand the UTAUT2 model by accounting for the psychological responses that influence user behaviour. While UTAUT2 includes Hedonic Motivation to capture the enjoyment users derive from using a platform, it does not fully account for the negative emotions that may discourage use, such as anxiety, embarrassment, or social stigma. These emotions are particularly relevant in the context of food-sharing, where users may feel uncomfortable about either giving away or receiving surplus food. The Emotional Factors construct introduces a more nuanced understanding of how these negative emotions, alongside positive feelings like satisfaction or joy, influence user intentions and behaviours. This expansion of the UTAUT2 model provides a more comprehensive framework for understanding how emotional responses, both positive and negative, affect technology adoption, particularly in socially sensitive contexts like food sharing.

3. Contributions to Perceived Value and Perceived Risk Literature

This research offers significant contributions to the literature on perceived value and perceived risk, particularly within the context of continuous usage on digital platforms. While the concept

of perceived value, which encompasses dimensions such as price value, performance value, and social value, is well-established in the literature, this research extends the understanding of how these factors specifically influence user behaviour in the context of food-sharing platforms. For instance, social value, derived from users' contributions to sustainability initiatives or helping those in need, emerges as a key driver not only for initial adoption but also for the continuous engagement with these platforms. This highlights how users' motivations on these platforms are not purely economic or functional; instead, they are deeply tied to personal values and ethical considerations.

The research further nuances the role of perceived value by demonstrating the interaction between various types of value. For example, users may continue using food-sharing platforms even if price value is not immediately clear, provided the social value or performance value remains strong. This complex interplay between different types of perceived value suggests that user loyalty and long-term engagement with digital platforms can be driven by a variety of factors, many of which go beyond immediate financial benefits. As a result, this study provides a more comprehensive model of perceived value, tailored to platforms that are designed not just for transactional purposes but also for social and environmental impact.

Moreover, the study challenges traditional assumptions about perceived risk, particularly the notion that heightened risk perceptions always deter user engagement. Conventional wisdom in digital platform research often holds that increased perceptions of risk—whether related to security, privacy, or, in the case of food-sharing platforms, concerns about food safety and hygiene—lead to reduced participation. However, this study finds that in the context of food-sharing platforms, such risks do not necessarily act as significant barriers to participation. While concerns about hygiene and safety are relevant, they can be mitigated by additional elements such as trust in the platform, the perceived social benefits of participation, or community influence.

This finding represents a notable addition to the body of literature, as it shows that risk perceptions are not always detrimental to user behaviour, particularly in digital environments that promote communal and social goals. For example, participants in food-sharing platforms may weigh the perceived risks of food hygiene against the emotional satisfaction and social value derived from helping reduce food waste or supporting a local community. By demonstrating that perceived risks can be effectively balanced by trust-building mechanisms

or social motivations, the study opens new avenues for research on how risk perceptions function in different digital environments.

This nuanced understanding suggests that perceived risk is not a static factor but can be influenced by platform design, user experience, and broader social contexts. For example, future research could explore how trust-building measures, such as transparent food sourcing, third-party verification, or community ratings, might further mitigate perceived risks in platforms aimed at sustainability and social impact. Therefore, this study not only expands the theoretical understanding of perceived value and perceived risk but also provides actionable insights for digital platform designers seeking to balance user concerns with sustained engagement, especially in socially-driven contexts like food sharing.

In conclusion, this research broadens the theoretical scope of perceived value and perceived risk by exploring how they interact in the specific context of digital food-sharing platforms. It reveals the complexity of user decision-making in environments where social goals and sustainability play a central role, and it paves the way for future investigations into how perceived risk can be mitigated in various digital settings without compromising user engagement.

4. Broadening the Applicability of Technology Acceptance Theories

One of the principal theoretical contributions of this study is the expansion of technology acceptance theories, particularly the UTAUT2 framework, to include contexts that have been largely overlooked in previous studies. Traditional research on technology acceptance has predominantly focused on corporate, educational, and business environments, where the main drivers of adoption tend to revolve around efficiency, productivity, and cost reduction (Venkatesh et al., 2016; Dwivedi et al., 2019; Dwivedi et al, 2020; Isaac et al., 2020). However, this study demonstrates that these frameworks can also be applied in socially-driven contexts, such as food-sharing platforms, where user motivations for both adoption and continuous usage are influenced by social, ethical, and emotional considerations, in addition to functional and economic factors. In food-sharing platforms, factors like contributing to sustainability, alleviating food poverty, and fostering a sense of community play a significant role in shaping user behaviour. This study expands the UTAUT2 framework by demonstrating that traditional constructs like performance expectancy and effort expectancy, while still relevant, do not fully capture the range of influences on adoption and usage in socially-driven digital platforms. For

instance, social value derived from helping others or environmental impact can outweigh traditional considerations of utility or ease of use.

Moreover, the integration of Risk Factors and Emotional Factors into the technology acceptance theories represents a critical advancement. In the context of food-sharing platforms, users' concerns about safety—both in terms of food quality and personal safety during in-person exchanges—are as important as functional aspects of the platform. Similarly, emotional comfort plays a crucial role, as users may feel awkwardness, shame, or embarrassment when engaging with surplus food distribution, especially in social settings. These emotional responses can significantly influence both initial adoption and sustained use, underscoring the need to incorporate emotional dimensions into technology acceptance models.

This broader application is particularly valuable in the context of digital platforms that rely on long-term user engagement for their success. In environments like sharing digital platforms, where social interactions and ethical considerations play a pivotal role, understanding how emotional and risk-related concerns impact user behaviour offers a more nuanced analysis than traditional technology acceptance models provide. As such, this study enriches the theoretical discourse by illustrating how technology acceptance theories can be adapted to account for the unique dynamics of socially-driven technologies, enhancing their explanatory power across a diverse range of sectors.

6.3.2 Practical Applications

This research offers several significant practical contributions to the domain of food-sharing platforms, offering significant perspectives for policymakers, platform companies, users, and other stakeholders within the food-sharing ecosystem.

For policymakers, the research offers critical findings that can influence the development of effective policies supporting food-sharing platforms. By comprehending the primary elements that affect user adoption and ongoing engagement, policymakers can create regulatory frameworks that promote the growth and sustainability of these platforms. Policies that standardise food safety protocols and provide incentives for food donations can enhance platform reliability and user appeal. The research aligns with broader sustainable development goals, such as sustainable consumption and production, the eradication of hunger, and climate

action. Policymakers can use the evaluation framework to assess the effects of food-sharing platforms on these goals, guiding funding allocations and support for initiatives that reduce food waste and enhance food security. Furthermore, by highlighting the social and economic benefits of food-sharing platforms, the research encourages policymakers to integrate these platforms into community engagement programmes, fostering a culture of sustainability and collective responsibility through educational campaigns and partnerships with local organisations.

For platform companies, the evaluation framework offers practical guidelines for improving user engagement and retention. By identifying key factors such as food accessibility, performance expectancy, and ease of use, platforms can more effectively customise their strategies to address user requirements, leading to higher satisfaction and sustained engagement. Ensuring high standards of food quality and safety is crucial for building user trust and platform credibility. The research provides detailed insights into user concerns and expectations, enabling companies to adopt best practices for food handling, storage, and distribution, through regular audits, transparent quality checks, and stringent safety protocols. The framework also emphasises the need for consistent metrics to measure the impact on food waste reduction. By using the standardised methods developed in this research, platform companies can accurately assess their effectiveness, enhancing their credibility with stakeholders and providing valuable feedback for continuous improvement. Furthermore, the research stresses the importance of interconnectedness and collaboration. Strong partnerships with food providers, non-profits, government agencies, and community organisations can enhance the reach and operational efficiency of platforms, leading to more efficient resource use and a greater community impact. Additionally, the focus on user-friendly technological solutions, such as mobile applications, real-time tracking features, and clear information on food availability and quality, can significantly boost platform usability and engagement.

Users benefit from an increased awareness and understanding of the economic and social advantages of food-sharing platforms. The research highlights cost savings, community building, and environmental impact, motivating users to participate more actively. Effective communication of these benefits encourages broader participation, fostering a sense of shared responsibility and engagement. The emphasis on user satisfaction and continuous improvement ensures that platforms remain responsive to user needs and expectations. Regular collection and analysis of user feedback allow platforms to identify opportunities for enhancement and

resolve issues swiftly, creating a more satisfying and enjoyable customer interaction that encourages long-term engagement and loyalty. Users also benefit from enhanced safety and quality assurance, as the research provides practical guidelines for implementing safety protocols and transparent quality checks, ensuring confidence in the food provided.

Other participants in the food-sharing ecosystem, such as food providers, donors, non-profits, and community organisations, also stand to benefit. For food providers and donors, the research highlights the importance of strategic partnerships and effective collaboration mechanisms, enabling more efficient and impactful contributions. The findings show that participating in food-sharing platforms benefits providers by reducing waste and supporting the community. Non-profits and community organisations can leverage the practical tools and strategies outlined in the evaluation framework to improve logistical efficiency, foster community engagement, and measure their impact more effectively. Collaborating with food-sharing platforms enables these organisations to expand their reach and encourage the establishment of a food system that is environmentally sustainable and socially just. The research also provides a foundation for future academic studies on food-sharing platforms by offering standardised metrics and methodologies.

In conclusion, this research makes substantial practical contributions to the field of food-sharing platforms, benefiting policymakers, platform companies, users, and other participants in the ecosystem. By offering a comprehensive evaluation framework and practical guidelines for continuous improvement, the research enhances the operational effectiveness, user engagement, and sustainable performance of food-sharing platforms. These contributions support broader sustainability goals, encourage responsible consumption and production while cultivating a more equitable and resilient food system.

Appendix A: Full List of the Papers in the Systematic Literature Review

Author	Title	Year	Journal/Book/Conference Title
Ciulli, F., Kolk, A., & Boe-Lillegraven, S.	Circularity Brokers: Digital Platform Organisations and Waste Recovery in Food Supply Chains	2020	Journal of Business Ethics
Mattila, M., Mesiranta, N., & Heikkinen, A.	Platform-based sustainable business models: reducing food waste in food services.	2020	International Journal of Entrepreneurship and Innovation Management,
Pramana, R. Y., Fadillah, A., & Daryanto, A.	Re-Food: Digital Platform-based Innovation Solutions for National Food Waste Problems	2021	Journal of Physics: Conference Series
Mazzucchelli, A., Gurioli, M., Graziano, D., Quacquarelli, B., & Aouina-Mejri, C.	How to fight against food waste in the digital era: Key factors for a successful food sharing platform	2021	Journal of Business Research
Principato, L., Trevisan, C., Formentini, M., Secondi, L., Comis, C., & Pratesi, C. A.	The influence of sustainability and digitalisation on business model innovation: The case of a multi-sided platform for food surplus redistribution	2023	Industrial Marketing Management
Michelini, Laura, Cecilia Grieco, Francesca Ciulli, and Alessio Di Leo.	Uncovering the impact of food sharing platform business models: a theory of change approach	2020	British Food Journal
Sgroi, F., Totaro, T., Modica, F., & Sciortino, C.	A Digital Platform Strategy to Improve Food Waste Disposal Practices: Exploring the Case of" Too Good To Go"	2024	Research on World Agricultural Economy
Hua, N., Shannon, R., Haider, M., & Moschis, G. P.	Factors influencing purchase intention of food surplus through a food-sharing platform	2023	Sustainability
Michelini, L., Principato, L., & Iasevoli, G.	Understanding food sharing models to tackle sustainability challenges	2018	Ecological Economics
Magno, F., & Cassia, F.	Predicting restaurants' surplus food platform continuance: Insights from the combined use of PLS-SEM and NCA and predictive model comparisons	2024	Journal of Retailing and Consumer Services
Richards, T. J., & Hamilton, S. F.	Food waste in the sharing economy	2018	Food Policy

Makov, T., Meshulam, T., Cansoy, M., Shepon, A., & Schor, J. B.	Digital food sharing and food insecurity in the COVID-19 era.	2023	Resources, Conservation and Recycling.
Harvey, J., Smith, A., Goulding, J., & Illodo, I. B.	Food sharing, redistribution, and waste reduction via mobile applications: A social network analysis	2020	Industrial Marketing Management
Cane, M., & Parra, C.	Digital platforms: mapping the territory of new technologies to fight food waste.	2020	British Food Journal
Schanes, K., & Stagl, S.	Food waste fighters: What motivates people to engage in food sharing?	2019	Journal of cleaner production
Privitera, D.	Describing the collaborative economy: Forms of food sharing initiatives.	2016	Economic Science for Rural Development Conference Proceedings
Ciaghi, A., & Villafiorita, A.	Beyond food sharing: Supporting food waste reduction with ICTs.	2016	2016 IEEE International Smart Cities Conference (ISC2)
Falcone, P. M., & Imbert, E.	Bringing a sharing economy approach into the food sector: The potential of food sharing for reducing food waste. Food waste reduction and valorisation	2017	Food waste reduction and valorisation: Sustainability assessment and policy analysis
Mullick, S., Raassens, N., Haans, H., & Nijssen, E. J.	Reducing food waste through digital platforms: A quantification of cross-side network effects.	2021	Industrial Marketing Management
Chauhan, Y.	Food waste management with technological platforms: Evidence from Indian food supply chains.	2020	Sustainability
Davies, A. R., & Legg, R.	Fare sharing: interrogating the nexus of ICT, urban food sharing, and sustainability.	2018	Food, Culture & Society
Huang, C. H., Liu, S. M., & Hsu, N. Y.	Understanding global food surplus and food waste to tackle economic and environmental sustainability	2020	Sustainability
de Almeida Oroski, F.	Exploring food waste reducing apps—a business model lens.	2020	Food Waste Management: Solving the Wicked Problem
Blackburn, O., Ritala, P., & Keränen, J.	Digital Platforms for the Circular Economy: Exploring Meta-Organisational Orchestration Mechanisms	2023	Organisation & Environment

Deineko, L., Gakhovych, N., Kushnirenko, O., & Tsyplitska, O.	Innovative business models of the circular economy in food production and processing.	2022	Journal of Hygienic Engineering & Design
Filimonau, V., & Gherbin, A. (2017).	An exploratory study of food waste management practices in the UK grocery retail sector	2017	Journal of cleaner production
Fassio, F., & Minotti, B. (2019).	Circular economy for food policy: The case of the RePoPP project in the City of Turin (Italy)	2019	Sustainability
Närvänen, E., Mattila, M., & Mesiranta, N.	Institutional work in food waste reduction: Start-ups' role in moving towards a circular economy.	2021	Industrial Marketing Management
Weymes, M., & Davies, A. R.	Valuing Surplus: Transitions, technologies and tensions in redistributing prepared food in San Francisco	2019	Geoforum
Karki, S. T., Bennett, A. C., & Mishra, J. L.	Reducing food waste and food insecurity in the UK: The architecture of surplus food distribution supply chain in addressing the sustainable development goals (Goal 2 and Goal 12.3) at a city level.	2021	Industrial Marketing Management
Sundgren, C.	Supply chain structures for distributing surplus food.	2020	The International Journal of Logistics Management
Choudhary, S., Nayak, R., Kumari, S., & Choudhury, H.	Analysing acculturation to sustainable food consumption behaviour in the social media through the lens of information diffusion.	2019	Technological Forecasting and Social Change
Chiu, M. C., & Chuang, K. H.	Applying transfer learning to achieve precision marketing in an omni-channel system–a case study of a sharing kitchen platform.	2021	International Journal of Production Research
Leipold, S., Weldner, K., & Hohl, M.	Do we need a ‘circular society’? Competing narratives of the circular economy in the French food sector.	2021	Ecological Economics
Do Canto, N. R., Grunert, K. G., & De Barcellos, M. D.	Circular food behaviors: a literature review.	2021	Sustainability
Niu, B., Chen, L., Li, Q., & Zeng, F.	Restaurants’ Platform Partnership for Social Promotion and Resilient Revenue: Is Reward-Based Traffic Really Rewardful?.	2024	Production and Operations Management
Li, S., Wang, L., Huang, J., Gopal, R., & Lin, Z.	Sizzle or Fizzle? Supply and Consumption Dynamics of Home-Cooked Food on Sharing Platform	2024	Production and Operations Management
Amaral, D. G., & Orsato, R. J.	Digital platforms for food waste reduction: The value for business users.	2023	Business Strategy and the Environment

Heidenstrøm, N., & Hebrok, M.	Towards realising the sustainability potential within digital food provisioning platforms: The case of meal box schemes and online grocery shopping in Norway	2022	Sustainable Production and Consumption
De Bernardi, P., Bertello, A., & Forliano, C.	Circularity of food systems: a review and research agenda.	2023	British Food Journal
Samsioe, E., & Fuentes, C.	Digitalising shopping routines: Re-organising household practices to enable sustainable food provisioning.	2022	Sustainable Production and Consumption
Meshulam, T., Font-Vivanco, D., Blass, V., & Makov, T.	Sharing economy rebound: The case of peer-to-peer sharing of food waste	2023	Journal of Industrial Ecology
Hellemans, I., Porter, A. J., & Diriker, D.	Harnessing digitalisation for sustainable development: Understanding how interactions on sustainability-oriented digital platforms manage tensions and paradoxes	2022	Business Strategy and the Environment
Nica-Avram, G., Harvey, J., Smith, G., Smith, A., & Goulding, J.	Identifying food insecurity in food sharing networks via machine learning.	2021	Journal of Business Research
Makov, T., Shepon, A., Krones, J., Gupta, C., & Chertow, M.	Social and environmental analysis of food waste abatement via the peer-to-peer sharing economy	2020	Nature communications
Lucas, B., Francu, R. E., Goulding, J., Harvey, J., Nica-Avram, G., & Perrat, B.	A Note on Data-driven Actor-differentiation and SDGs 2 and 12: Insights from a Food-sharing App.	2021	Research Policy
Lewis, T.	Digital food: from paddock to platform.	2018	Communication Research and Practice
Michelini, L., Grieco, C., & Dentchev, N.	Leveraging collaborations to increase the impact of food sharing platforms.	2023	British Food Journal
Ranjbari, M., Esfandabadi, Z. S., Siebers, P. O., Pisano, P., & Quatraro, F.	Digitally enabled food sharing platforms towards effective waste management in a circular economy: A system dynamics simulation model.	2024	Technovation
Yamabe-Ledoux, A. M., Saito, O., & Hori, K.	Exploring the opportunities and challenges of ICT-mediated food sharing in Japan.	2023	Sustainability
Morilla, J. A. R., Bagsic, F. C., Cruz, M. K. D., Patio, C. D. A., & Yabut, E. R.	Foodernity: A Mobile and Web Application for Food Sharing	2021	2021 1st International Conference in Information and Computing Research

Phiri, G., & Trevorrow, P.	Sustainable household food management using smart technology.	2019	2019 10th International Conference on Dependable Systems, Services and Technologies (DESSERT)
Soloveva, D., Skippari, M., & Karjaluoto, H.	To Share or Not: Drivers and Barriers of Sustainable Peer-to-Peer Food Sharing Platform Adoption.	2023	Business for Sustainability, Volume II: Contextual Evolution and Elucidation
Nica-Avram, G., Ljevar, V., Harvey, J., Branco-Illodo, I., Gallage, S., & Goulding, J.	ll-fated interactions: modeling complaints on a food waste fighting platform.	2022	2022 IEEE International Conference on Big Data
Saginova, O., Zavyalov, D., Kireeva, N., Zavyalova, N., & Saginov, Y.	Food-sharing in the distributed use economy.	2021	E3S Web of Conferences
Thornton, H. C.	Business model change and internationalisation in the sharing economy.	2024	Journal of Business Research
Affolderbach, J., & De Chardon, C. M.	Just transitions through digitally enabled sharing economies?	2021	DIE ERDE–Journal of the Geographical Society of Berlin
Patel, S., Dora, M., Hahladakis, J. N., & Iacovidou, E.	Opportunities, challenges and trade-offs with decreasing avoidable food waste in the UK.	2021	Waste Management & Research
Kirmani, M. D., Uddin, S. F., Sadiq, M. A., Ahmad, A., & Haque, M. A.	Food-leftover sharing intentions of consumers: An extension of the theory of planned behavior	2023	Journal of Retailing and Consumer Services
Grieco, C.	Sharing at social distance: “clay-footed giants” coping strategies for navigating the pandemic.	2023	Journal of Strategy and Management
Choi, T. M., Guo, S., Liu, N., & Shi, X.	Values of food leftover sharing platforms in the sharing economy	2019	International Journal of Production Economics
Puram, P., & Gurumurthy, A.	Sharing economy in the food sector: A systematic literature review and future research agenda.	2023	Journal of Hospitality and Tourism Management
Milligan, G., Harvey, J., Dowthwaite, L., Vallejos, E. P., Nica-Avram, G., & Goulding, J.	Assessing relative contribution of Environmental, Behavioural and Social factors on Life Satisfaction via mobile app data.	2023	2023 IEEE International Conference on Big Data (BigData)
Kör, B., Krawczyk, A., & Wakkee, I.	Addressing food loss and waste prevention.	2022	British Food Journal

ADEBISI, J.	Combating Consumer Food Waste–An Exploration of Information Communication Technology Approach	2023	Journal of Digital Food, Energy & Water Systems
Hong, J., Jaegler, A., & Gergaud, O.	Mobile applications to reduce food waste in supply chains: a systematic literature review.	2024	British Food Journal
Ruiner, C.	Voluntary work in digital contexts as gift exchange.	2021	Sustainability
Schanes, K., Dobernig, K., & Gözet, B.	Food waste matters-A systematic review of household food waste practices and their policy implications.	2018	Journal of cleaner production
Bolwig, S., Tanner, A. N., Riemann, P., Redlingshöfer, B., & Zhang, Y.	Reducing consumer food waste using green and digital technologies.	2021	Reducing consumer food waste using green and digital technologies
Schanes, K., Dobernig, K., & Gözet, B.	Food waste matters-A systematic review of household food waste practices and their policy implications.	2018	Journal of cleaner production
Haas, R., Aşan, H., Doğan, O., Michalek, C. R., Karaca Akkan, Ö., & Bulut, Z. A.	Designing and Implementing the MySusCof App—A mobile app to support food waste reduction.	2022	Foods
Zhao, G., Liu, S., Wang, Y., Lopez, C., Ong, A., & Chen, X.	Reducing food waste from social innovation perspective: a review of measures, research gaps and future directions.	2023	International Food and Agribusiness Management Review
Ciccullo, F., Fabbri, M., Abdelkafi, N., & Pero, M.	Exploring the potential of business models for sustainability and big data for food waste reduction.	2022	Journal of Cleaner Production
Hanson, V., & Ahmadi, L.	Mobile applications to reduce food waste within Canada: A review.	2022	The Canadian Geographer/Le Géographe canadien
Moltene, L., & Orsato, R. J.	The sharing economy in practice: An exploratory study of the acceptance and use of digital platforms in food waste reduction.	2021	Revista de Administração de Empresas
Schanes, K. and Stagl, S.	Food waste fighters: What motivates people to engage in food sharing?	2019	Journal of Cleaner Production
Lombardi, M. and M. Costantino.	A social innovation model for reducing food waste: the case study of an Italian non-profit organisation. Administrative Sciences	2020	Administrative Sciences
Angelidou, M. and A. Psaltoglou.	An empirical investigation of social innovation initiatives for sustainable urban development. Sustainable Cities and Society	2017	Sustainable Cities and Society

Appendix B: Robustness Checks

Table I: Evaluation of nonlinear effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics	P values
QE (PRI) -> PERV	0.026	0.031	0.041	0.637	0.524
QE (PERF) -> PERV	-0.059	-0.058	0.033	1.75	0.08
QE (SOC) -> PERV	0.009	0.007	0.03	0.294	0.769
QE (ENJ) -> PERV	0.024	0.024	0.039	0.613	0.54
QE (PERV) -> BI	-0.027	-0.025	0.058	0.472	0.637
QE (SAT) -> BI	0.08	0.08	0.064	1.254	0.21
QE (RISK) -> BI	0.053	0.04	0.055	0.968	0.333

Table II: Evaluation of unobserved heterogeneity through FIMIX-PLS

Criteria	Number of segments			
	1	2	3	4
AIC (Akaike's information criterion)	1380.666	1337.756	1325.766	1294.493
AIC3 (modified AIC with Factor 3)	1393.666	1364.756	1366.766	**1349.493**
AIC4 (modified AIC with Factor 4)	1406.666	**1391.756**	1407.766	1404.493
BIC (Bayesian information criterion)	**1425.86**	1431.621	1468.301	1485.699
CAIC (consistent AIC)	**1438.86**	1458.621	1509.301	1540.699
HQ (Hannan-Quinn criterion)	1398.878	1375.581	1383.203	1371.544
MDL5 (minimum description length with factor 5)	**1710.636**	2023.079	2366.441	2690.521
LnL (LogLikelihood)	-677.333	-641.878	-621.883	-592.247
EN (normed entropy statistic)	0	0.908	0.711	0.713
NFI (non-fuzzy index)	0	0.918	0.701	0.681
NEC (normalized entropy criterion)	0	22.001	69.116	68.651

Table IV: Results of the Gaussian Copula Approach

		Original sample (O)	Sample mean (M)	Standard deviation	T statistics	*P* values
Gaussian copula of model 1-8 (Single endogenous variables)	**GC (PRI) -> PERV**	0.001	0.004	0.063	0.015	0.988
	GC (PERF) -> PERV	-0.151	-0.146	0.098	1.532	0.126
	GC (SOC) -> PERV	-0.021	-0.015	0.098	0.212	0.832
	GC (EST) -> PERV	0.081	0.067	0.214	0.376	0.707
	GC (ENJ) -> PERV	-0.044	-0.043	0.163	0.269	0.788
	GC (PERV) -> BI	0.169	0.149	0.162	1.046	0.295
	GC (RISK) -> BI	1.673	0.23	0.896	1.868	0.062
	GC (SAT) -> BI	0.189	0.189	0.174	1.083	0.279
Gaussian copula of model 9 (endogenous variables: PRI, PERF)	**GC (PRI) -> PERV**	0.065	0.068	0.073	0.889	0.374
	GC (PERF) -> PERV	-0.201	-0.198	0.117	1.719	0.086

Gaussian copula of model 10 (endogenous variables: PRI, SOC)	**GC (PRI) -> PERV**	0.01	0.014	0.068	0.151	0.88
	GC (SOC) -> PERV	-0.028	-0.025	0.108	0.259	0.796
Gaussian copula of model 11 (endogenous variables; PRI, EST)	**GC (PRI) -> PERV**	-0.002	0.003	0.064	0.025	0.98
	GC (EST) -> PERV	0.081	0.069	0.217	0.373	0.709
Gaussian copula of model 12 (endogenous variables; PRI, ENJ)	**GC (PRI) -> PERV**	0.007	0.012	0.066	0.113	0.91
	GC (ENJ) -> PERV	-0.048	-0.048	0.172	0.279	0.78
Gaussian copula of model 13 (endogenous variables; PRI, PERV)	**GC (PRI) -> PERV**	0.001	0.004	0.063	0.015	0.988
	GC (PERV) -> BI	0.169	0.149	0.162	1.046	0.295
Gaussian copula of model 14 (endogenous variables: PRI, RISK)	**GC (PRI) -> PERV**	0.001	0.004	0.063	0.015	0.988
	GC (RISK) -> BI	1.673	0.23	0.896	1.868	0.062
Gaussian copula of model 15 (endogenous variables: PRI, SAT)	**GC (PRI) -> PERV**	0.001	0.004	0.063	0.015	0.988
	GC (SAT) -> BI	0.189	0.189	0.174	1.083	0.279
Gaussian copula of model 16 (endogenous variables: PERF, SOC)	**GC (PERF) -> PERV**	-0.205	-0.199	0.123	1.663	0.096
	GC (SOC) -> PERV	0.087	0.087	0.112	0.777	0.437
Gaussian copula of model 17 (endogenous variables: PERF, EST)	**GC (PERF) -> PERV**	-0.212	-0.19	0.119	1.786	0.074
	GC (EST) -> PERV	0.303	0.234	0.26	1.167	0.243
Gaussian copula of model 18 (endogenous variables: PERF, ENJ)	**GC (PERF) -> PERV**	-0.201	-0.185	0.117	1.72	0.085
	GC (ENJ) -> PERV	0.111	0.091	0.184	0.606	0.545
Gaussian copula of model 19 (endogenous variables: PERF, PERV)	**GC (PERF) -> PERV**	-0.151	-0.146	0.098	1.532	0.126
	GC (PERV) -> BI	0.169	0.149	0.162	1.046	0.295
Gaussian copula of model 20 (endogenous variables: PERF, RISK)	**GC (PERF) -> PERV**	-0.151	-0.146	0.098	1.532	0.126
	GC (RISK) -> BI	1.673	0.23	0.896	1.868	0.062
Gaussian copula of model 21 (endogenous variables: PERF, SAT)	**GC (PERF) -> PERV**	-0.151	-0.146	0.098	1.532	0.126
	GC (SAT) -> BI	0.189	0.189	0.174	1.083	0.279
Gaussian copula of model 22 (endogenous variables: SOC, EST)	**GC (SOC) -> PERV**	-0.042	-0.028	0.114	0.365	0.715
	GC (EST) -> PERV	0.124	0.092	0.251	0.493	0.622
Gaussian copula of model 23 (endogenous variables: SOC, ENJ)	**GC (SOC) -> PERV**	-0.008	0	0.115	0.07	0.944
	GC (ENJ) -> PERV	-0.038	-0.042	0.189	0.203	0.84
Gaussian copula of model 24 (endogenous variables: SOC, PERV)	**GC (SOC) -> PERV**	-0.021	-0.015	0.098	0.212	0.832
	GC (PERV) -> BI	0.169	0.149	0.162	1.046	0.295
Gaussian copula of model 25 (endogenous variables: SOC, RISK)	**GC (SOC) -> PERV**	-0.021	-0.015	0.098	0.212	0.832
	GC (RISK) -> BI	1.673	0.23	0.896	1.868	0.062
Gaussian copula of model 26 (endogenous variables: SOC, SAT)	**GC (SOC) -> PERV**	-0.021	-0.015	0.098	0.212	0.832
	GC (SAT) -> BI	0.189	0.189	0.174	1.083	0.279
Gaussian copula of model 27 (endogenous variables: EST, ENJ)	**GC (EST) -> PERV**	0.122	0.096	0.25	0.487	0.627
	GC (ENJ) -> PERV	-0.068	-0.061	0.183	0.374	0.709
Gaussian copula of model 28 (endogenous variables: EST, PERV)	**GC (EST) -> PERV**	0.081	0.067	0.214	0.376	0.707
	GC (PERV) -> BI	0.169	0.149	0.162	1.046	0.295
Gaussian copula of model 29	**GC (EST) -> PERV**	0.081	0.067	0.214	0.376	0.707

(endogenous variables: EST, RISK)	**GC (RISK) -> BI**	1.673	0.23	0.896	1.868	0.062
Gaussian copula of model 30 (endogenous variables: EST, SAT)	**GC (EST) -> PERV**	0.081	0.067	0.214	0.376	0.707
	GC (SAT) -> BI	0.189	0.189	0.174	1.083	0.279
Gaussian copula of model 31 (endogenous variables: ENJ, PERV)	**GC (ENJ) -> PERV**	-0.044	-0.043	0.163	0.269	0.788
	GC (PERV) -> BI	0.169	0.149	0.162	1.046	0.295
Gaussian copula of model 32 (endogenous variables: ENJ, RISK)	**GC (ENJ) -> PERV**	-0.044	-0.043	0.163	0.269	0.788
	GC (RISK) -> BI	1.673	0.23	0.896	1.868	0.062
Gaussian copula of model 33 (endogenous variables: ENJ, SAT)	**GC (ENJ) -> PERV**	-0.044	-0.043	0.163	0.269	0.788
	GC (SAT) -> BI	0.189	0.189	0.174	1.083	0.279
Gaussian copula of model 34 (endogenous variables: PERV, RISK)	**GC (RISK) -> BI**	1.494	0.154	0.871	1.716	0.086
	GC (PERV) -> BI	0.118	0.129	0.165	0.719	0.472
Gaussian copula of model 35 (endogenous variables: PERV, SAT)	**GC (PERV) -> BI**	0.12	0.092	0.174	0.691	0.49
	GC (SAT) -> BI	0.113	0.132	0.184	0.616	0.538
Gaussian copula of model 36 (endogenous variables: RISK, SAT)	**GC (SAT) -> BI**	0.132	0.158	0.18	0.731	0.465
	GC (RISK) -> BI	1.522	0.168	0.861	1.768	0.077

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