International Journal of Finance and Managerial Accounting, Vol.13, No.49, Spring 2028

Circular Economy Approach to Reducing Food Waste

Nafiseh Gholamian Rad
Department of Management, UEA.C., Islamic Azad University, Dubai, United Arab Emirates
4323545584@iau.ir

Alborz Hajikhani
Department of Management, Hi.C., Islamic Azad University, Zanjan, Iran
(Corresponding Author)
alborz.hajikhani@gmail.com

Seyed Mehdi Mazaheri
Department of Management, SR.C., Islamic Azad University, Tehran, Iran
mmdmt39@gmail.com

Submit: 26/06/2025 **Accept:** 12/07/2025

ABSTRACT

The aim of the present study was to identify the factors influencing the reduction of food waste from a circular economy perspective.

This study was quantitative in nature, applied in purpose, and descriptive-analytical in terms of methodology. The statistical population consisted of all managers and owners of food stores in the city of Qazvin, totaling 3,200 individuals. Among them, 384 individuals were selected as the sample using Cochran's formula and a simple random sampling method. A questionnaire was used for data collection. To assess validity, content validity was employed, and for reliability, Cronbach's alpha coefficient was used. The normality of the variables was confirmed using the Kolmogorov-Smirnov test, and the results of the Friedman test showed that operational management, commercial management, supply management, waste management, and water and energy management were prioritized in that order.

Keywords: Circular economy, food waste, entrepreneurship.

1. Introduction

The circular economy is one of the emerging economic topics that has garnered increasing attention from experts in recent years. The fundamental philosophy of the circular economy revolves around the optimal use of limited resources, waste reduction, and the reuse of materials in production or by-products. In fact, according to the existing literature on linear economic production processes, the primary goal of economic organizations is profit maximization. However, in the circular economy, waste management also receives significant attention in addition to this objective. The circular economy creates added value and profit margins, reduces costs, increases competitiveness, decreases environmental pollution, and generates new job opportunities.

Some developed countries, such as Germany, Japan, the European Union, and especially China, have made considerable progress over the past two decades by establishing legal frameworks and governmental institutions to implement circular economy models at national and regional levels. Currently, the linear economy model (extract–make–dispose) relies heavily on cheap materials and energy. The circular economy is based on designing for reuse, recycling, and renewable resources, with the ultimate goal of producing products that ensure components and materials are maintained at their highest utility and productivity.

As envisioned by the pioneers of the circular economy, it is a continuous and positive growth cycle that preserves and enhances natural capital. By increasing resource efficiency and effectively managing products

and renewable cycles at every scale, it also reduces systemic risks. Unlike the linear model, the circular economy emphasizes environmental preservation through increased use of renewable or recyclable resources while reducing the consumption of raw materials and energy.

Establishing a circular economy requires fundamental changes in the value chain—from product design and production processes to new business models and consumption patterns. It transforms waste into new resources, extends product life cycles, and helps preserve natural resources. Previously, food retailers primarily focused on increasing sales by ensuring high levels of service and expanding product varieties. Today, however, the shift toward fresher and ultra-fresh products as both a value proposition and sales opportunity has posed new challenges for them.

On the other hand, the high volume of food waste and its impact on social and environmental sustainability have become increasingly evident in recent years. Additionally, growing pressure to enhance environmental protection and changing consumer behavior have compelled food retailers to address the issue of food waste reduction. Therefore, conducting a study to apply a circular economy approach to food waste reduction appears essential.

The main objective of this research is to identify the factors affecting food waste reduction from a circular economy perspective. Despite the significance of the circular economy's role in reducing food waste, research in this area is scarce, and the challenges involved remain unclear. More studies are needed to fill this gap. Consequently, the findings of the present

research are expected to address the lack of previous studies in this field.

Theoretical Foundations of the Research Waste management plays a central role in the circular economy. The waste hierarchy established by the European Union exemplifies efforts to systematize waste management. According to this hierarchy, waste management activities are prioritized as follows: prevention, preparation for reuse, recycling, and finally, energy recovery through disposal. The aim of this prioritization is to select the best environmental outcome.

The methods used to collect and manage waste and refuse can either result in high recycling rates and the reintegration of valuable materials into the economy or produce an inefficient system in which a significant portion of recyclable waste is landfilled or incinerated. In the latter case, there is significant potential for environmental harm and substantial economic loss (Hong et al., 2017).

The circular economy, also known as the regenerative economy, refers to a system that eliminates waste—meaning products are made from materials that will not accumulate in landfills or oceans for years. More precisely, the circular economy aims to improve the end-of-life phase of products and minimize energy consumption (Yeganeh et al., 2024).

This approach contrasts with the traditional linear economy model, which follows the "take-make-dispose" production paradigm. Advocates of the circular economy argue that, in a world where

sustainability is redefined, consumer quality of life does not need to decrease. They also claim that this model does not necessarily impose extra costs on producers.

In this regard, in 2017, the British Standards Institution provided a framework for implementing the circular economy within organizations. This framework aligns business processes at the organizational level with circular economy principles (Fakhrayi, 2024). In the circular economy, reuse and renewability are emphasized, and its ultimate goal is to preserve and maintain products, components, and materials at their highest level of usefulness and productivity.

As imagined by the founders of the circular economy, it is a positive and continuous development cycle that preserves and enhances natural capital, improves resource efficiency, and reduces systemic risks through effective management of products and renewable cycles at any scale. Unlike the linear economy, the circular model focuses on environmental preservation by increasing the share of renewable or recyclable resources while reducing the consumption of raw materials and energy.

Building a circular economy requires fundamental transformations in the value chain—from product design and production processes to new business models and consumption patterns. It converts waste into new resources, extends product life, and helps conserve natural resources (Salari & Moradi, 2024).

Hong

Food waste refers to the spoilage of products during distribution, processing, and consumption stages, and the presence of food waste in production and consumption stages indicates inefficiencies in food usage methods. Food waste impacts food sustainability in three dimensions—economic, social, and environmental—and results in economic losses, reduced investment returns, hindered development, and significant environmental effects.

Food waste is also a major contributor to climate change. It includes all the resources required for food production, transportation, and processing, which, when wasted, lead to greenhouse gas emissions and the depletion of water and agricultural resources. According to UN reports, if food waste were considered a country, it would be the third-largest emitter of greenhouse gases globally (Khosravani et al., 2016).

Studies estimate that nearly one-third of all food produced globally is not consumed and becomes waste (Sourani & Ahmadvand, 2019; Sadri, 2023). Furthermore, the presence of food waste during production and consumption stages reflects inefficiencies in the use of food system resources. Food waste accounts for more than one-quarter of all freshwater use. Reducing food waste can improve food accessibility and system efficiency without increasing agricultural inputs, using scarce natural resources, or relying on advanced production technologies. In other words, reducing food waste without compromising living standards can improve households' economic conditions (Schuster & Torero, 2016).

According to the Food and Agriculture Organization (FAO), food waste refers to qualitative changes that make food inaccessible, scarce, or unusable. International reports indicate that 30% of the world's food is wasted annually (Riesinger & Hubner, 2022).

In Iran, research shows that approximately 130 million tons of food are produced annually, of which over 35 million tons are lost during production, distribution, and consumption (Tayefouri & Rastegari, 2015). On average, 35% of food products are wasted annually in Iran, which equates to 25% of the country's oil revenue and could feed 15 million people (Sourani & Ahmadvand, 2018). The estimated annual value of agricultural production in Iran is around $12 billion, with waste accounting for about $3.6 billion—a considerable figure (Khosravani et al., 2016).

Each year, large amounts of crops are wasted at various stages, including planting, cultivation, harvesting, and post-harvest. Post-harvest factors include packaging, storage, transportation, processing, and consumer usage (Izadi & Hayati, 2013).

1) Schuster & Torero
2) Food and Agricultural Organization
3) Riesenegger & Hübner

Food waste is a global issue with substantial economic, ethical, and environmental costs. Various factors contribute to this problem, from poor road infrastructure to consumer behavior. According to FAO (2011), one-third of food produced globally becomes food waste, with half of this occurring at the household level (McCarthy et al., 2018; Schmidt &

Mathis, 2018). With global population growth, this issue is escalating—approximately 1.3 billion tons of food are wasted annually, with associated losses estimated at $2.6 trillion. This wasted food could feed 815 million hungry people more than four times over (Shahsoni-Mojarad & Mahdikhani, 2021).

In Europe, the consumer sector (retail, food services, and households) accounts for nearly two-thirds of food waste. Studies show that retail plays a crucial role in preventing food loss (FAO, 2019). Stenmarck et al. (2016) estimated that the wholesale and retail sectors in the EU are responsible for 5% of food waste. Cicatiello et al. (2016) found that food waste in European retail stores costs an average of 1.6% of net sales, and reducing this waste can double profits.

Generally, food waste during distribution and consumption stems from two main sources: consumer behavior and external factors. Consumer-related causes include poor household budgeting skills, misinterpretation of food labels, high sensitivity to hygiene, unwillingness to eat leftovers, overstocking, lack of concern about waste or global hunger, and low environmental awareness (Aschenwitzel et al., 2023).

External factors include household size, store promotions, advertising (which encourages consumerism), economic savings, distance from shopping centers, and limited shopping frequency. In some countries, one major cause of food waste during distribution and consumption is retail price promotions (Boulet et al., 2021). Some consumers tend to buy more due to fear of future price increases, although this does not necessarily mean they produce food waste. It could be argued that consumer frugality, combined with moderation in spending, can effectively reduce food waste (Big Babaei & Bashroui Shargh, 2023).

Increased consumer purchases in response to retail price promotions and price

1) Mc Carthy
2) Schmidt & Matthies
3) Stenmarck
4) Cicatiello
5) Aschemann-Witzel
6) Boulet

disparities stem from the psychological influence of advertising. Consumers who focus on low prices are typically either financially constrained or generally concerned about the price they pay relative to the value they receive. As such, these individuals are more strongly influenced by such advertisements. The reason is that making these types of purchases not only alleviates their concerns but also gives them a sense of being smart and savvy shoppers.

Psychological differences in how consumers interpret prices provide a more accurate picture of the role that price advertising plays in generating household food waste. In fact, psychological factors and consumer attitudes have a significant impact on food waste (Ranjbaran et al., 2023).

Improving food preparation skills, reusing leftover food, and aligning one's diet with the amount of food prepared can also play an important role in preventing food waste. Under such conditions, even products purchased as a result of retail price promotions and discounts, if properly stored and consumed, may not have any detrimental effect on food waste generation (Aghalar & Aghalar, 2023).

In today's complex world, new types of value creation must be developed so that entrepreneurs can control environmental pollution and achieve success at various levels. Therefore, the circular economy cycle is an advanced strategy adopted in developed countries to overcome this gap. Circular economy business methods are unique, as compared to traditional business methods, in that they create a new form of value—a circular lifecycle of products/services for organizations—which is assumed to be adaptable to economic and social changes (Matos, 2022). This means that developing a new organizational concept requires new tools and functional units.

Various studies have shown that circular economy business models can be more effective and efficient than traditional business models. For instance, in industries such as food, construction, and transportation, circular business models can yield cost savings of 40% to 60% compared to conventional methods (Shahdkar et al., 2021). In fact, the circular economy has been recognized as a solution for aligning economic growth with environmental protection, offering a reliable framework for fundamentally improving current business models toward preventive development and ensuring eco-industrial regeneration and improved well-being based on recycled ecological integration.

It is assumed that the circular economy increases resource efficiency by recirculating materials and resources; products either re-enter the economic cycle

or reintegrate into the natural cycle, thus reducing waste and pollution. A better balance between the components of sustainable development is ensured. Transitioning from a linear model of production–consumption–waste to a model of production–consumption–reuse requires the participation and commitment of many stakeholders, including producers, consumers, and policymakers (Ghorbanpour et al., 2022).

Given the above, the circular economy is an economic system aimed at minimizing waste and maximizing resource use.

This regenerative approach contrasts with the traditional linear economy, where the production model follows a "take-make-dispose" pattern. Reducing food waste is considered essential for the successful implementation of circular economy principles. Therefore, this study identifies the factors influencing food waste reduction through a circular economy approach.

Mattos

Literature Review

Teixeira et al. (2025), in a study titled "Circular Economy Models for Reducing Food Waste and Enhancing Sustainability: A Case Study of a Cooperative Company", explored the potential of the circular economy as a strategic approach to reduce food waste and enhance sustainability using a cooperative company as a case study. The study employed a mixed-methods approach, integrating semi-structured interviews with producers and questionnaires for consumers. Quantitative findings showed a significant positive correlation between the cooperative's business model and food waste reduction, as well as broader impacts on sustainability. The environmental dimension was found to be the most influential in shaping the business model. Qualitative insights indicated that producers recognize circular economy principles as vital for sustainable practices, while consumers are increasingly aware of food waste issues. Additionally, the adopted model is adaptable and replicable in regional and global contexts, especially in emerging economies and sustainable agricultural systems, fostering synergy between local producers, consumers, and public policy.

Dexhne et al. (2023) conducted a systematic literature review titled "Circular Economy Strategies for Reducing Food Waste in Schools".

The study used Denyer and Tranfield's (2009) five-step methodology and monographic analysis. Sources were selected from Google Scholar, MDPI, ScienceDirect, and Scopus. Results showed that school cafeterias can implement responsible practices through preventive and recycling measures to reduce food waste and its environmental impact. The study provides a foundation for school administrators and cafeterias to implement circular economy policies and waste management practices, promoting responsible food consumption and supporting sustainable consumption strategies, benefiting schools, the environment, and society at large. Saha (2023) in "Circular Economy Strategies for Sustainable Waste Management in the Food Industry", examined circular economy strategies such as waste reduction, reuse, recycling, and resource recovery. The study assessed their potential to reduce environmental impacts and increase economic benefits in the food industry. Challenges and opportunities related to circular economy implementation—such as regulatory barriers, consumer behavior, and market demand—were discussed. The paper also presented case studies on circular economy initiatives in the food industry, highlighting best practices and lessons learned. Findings demonstrated that circular economy strategies offer a comprehensive and integrated approach to sustainable waste management in the food sector, with successful implementation requiring collaboration and innovation across the entire food value chain.

Brancoli et al. (2017), in their study "Life Cycle Assessment of Supermarket Food Waste", noted that although supermarkets generate less waste compared to households and agriculture, they significantly impact the supply chain, including upstream suppliers and downstream consumers. In a case study of a Swedish supermarket, they found that meat and bread waste contributed most to the supermarket's environmental footprint. As bread constitutes a major portion of food waste in many Swedish supermarkets, it is a key item for interventions aimed at reducing environmental impacts. Separating packaging from food waste at the source and repurposing bread as animal feed were explored as alternatives, both of

which were found to reduce the supermarket's carbon footprint.

Pishdar et al. (2024) conducted a study to identify the causes and evaluate strategies for reducing fruit and vegetable waste at the retail and consumer levels. The study involved experts in the fruit and vegetable supply chain familiar with recycling and waste reduction systems. A purposive and snowball sampling method was used. After reviewing the literature, causes and strategies were refined using the Delphi method. Strategy weighting was done via the SWARA method. Results showed that "improving transportation, handling, and storage to prevent spoilage" and "offering items according to customer demand" ranked first and second among retail waste-reduction strategies, while "regular and mindful purchasing behavior" and "education and awareness in schools" were top-ranked consumer-level strategies.

Falahati et al. (2022), in a study titled "Reducing Food Waste in Retail Stores", noted that food retailers often prioritize high availability and variety to enhance customer satisfaction. However, due to intense competition, pressure to meet sales targets, and concerns over unsold products, environmental impacts, and ethical questions regarding food disposal, retailers are increasingly shifting their strategies. They prefer evidence-based decisions over experience-based ones to prevent food waste.Sourani and Ahmadvand (2019), in their study "Household Food Waste and Its Influencing Factors in Najafabad County", investigated food waste and its determinants among individuals aged 15–64 in 405 households in the county's central district. Households were categorized as wasteful, moderate, or thrifty based on their food waste levels. Hierarchical regression analysis showed that awareness had a positive effect, while social norms, attitudes toward waste, knowledge and skills in waste reduction, infrastructure, and having a time schedule negatively affected household food waste. Collectively, these factors explained 25% of the variance in household food waste.

A	B	C	D	E	F	G
Operational I	384	1	5	4.01	0.367	39.86
Commercial	384	1	5	4.21	0.469	37.53
Supply Mana	384	1	5	4.1	0.441	36.18
Waste Mana	384	1	5	3.99	0.424	33.91
Water and Er	384	1	5	4.22	0.479	37.14

Research Methodology

The present study is quantitative in nature, applied in purpose, and descriptive-analytical in method. The statistical population included all food store managers and owners in Qazvin city, totaling 3,200 individuals. A sample of 384 participants was selected using Cochran's formula and simple random sampling. Data was collected using a questionnaire. Content validity was assessed, and Cronbach's alpha was used to confirm reliability. The normality of variables was verified via the Kolmogorov–Smirnov test, and the Friedman test was used for ranking the factors.

Research Findings

To identify and prioritize the factors influencing food waste reduction with a circular economy approach, a questionnaire consisting of 26 items across 5 indicators (based on a 5-point Likert scale) was distributed among 384 food store managers and owners in Qazvin city. The table below presents the descriptive statistics of the research variables:

According to Table (1), the lowest response value for the questionnaire items is 1 (very low) and the highest response value is 5

(very high). Also, based on the results of Table (5), it was found that the mean response values for all factors are above 3 (average), indicating that the respondents agree with the considered factors.

Furthermore, to determine reliability, Cronbach's alpha was used, and to check the normality of the variables, the Kolmogorov-Smirnov test was applied.

According to the results in Table 2, the assumption of normal distribution of the data was confirmed.

Furthermore, the results of Table 3 indicated that the values of Cronbach's alpha coefficients for all variables were above 0.70, confirming the reliability of the measurement tool using this index.

Finally, the Friedman test was used to rank the factors.

Table 3: Cronbach's Alpha Values

	A	B	C	D
	Variable	Kolmogorov-Smirnov Statistic	Sig. (p-value)	Status
	Operational Management	0.201	0.1	Normal
	Commercial Management	0.187	0.177	Normal
	Supply Management	0.141	0.104	Normal
	Waste Management	0.12	0.028	Normal
	Water and Energy Management	0.04	0.011	Normal

Row	Variable	Cronbach's Alpha
1	Operational Management	0.831
2	Commercial Management	0.743
3	Supply Management	0.751
4	Waste Management	0.769
5	Water and Energy Management	0.721

Table 4: Ranking of Factors Affecting the Reduction of Food Waste with a Circular Economy Approach

Variable	Sample Size	Mean Rank	Chi-Square	Degrees of Freedom	Significance Level
Operational Management	384	3.12	127.817	4	0.001
Commercial Management	384	2.98			
Supply Management	384	2.81			
Waste Management	384	2.76			
Water and Energy Manage	384	2.67			

Results

The findings revealed the following prioritization: operational management ranked as the first priority, commercial management as the second, supply management as the third, waste management as the fourth, and water and energy management as the fifth.

Conclusion and Recommendations:

The results of prioritizing the factors influencing food waste reduction within the framework of the circular economy showed that operational management holds the highest priority. Retailers, in order to gain a competitive edge in the market and cope with increasing pressures in the retail environment, are compelled to engage in activities beyond profitability. These include goals such as business ethics, social responsibility, environmental management practices, efforts to green the supply chain, and addressing issues like eco-friendly consumption, public health, ethical food, fair trade, labor rights, environmental protection, and global warming (Patlejch & Renko, 2016).

The second priority pertains to commercial management. The environmental, social, and economic importance of reducing food waste in food retailing necessitates continuous and comprehensive examination of options to ensure both satisfactory customer service and minimal waste. Due to intense competition and the need to meet sales targets, food retailers often aim for high availability and wide variety, which contributes significantly to inventory surplus. The economic burden of unsold products, environmental costs of wasted resources, and ethical concerns regarding edible food disposal have increasingly pushed retailers to revise their strategies. Studies indicate that food retailers can actively reduce waste through better store operation planning (Falahati et al., 2022).

Supply management was identified as the third priority. The distribution sector plays a vital role in the economy, acting as a bridge between producers and consumers and significantly influencing pricing. A competitive and efficient retail sector can enhance consumer welfare. Retailers have a central role in shifting consumer behavior and are among the most influential players in the supply chain (Moody & Hosseini, 2017). In recent years, the growing global

connectivity and competitive environment have increased the need for optimal and cost-effective supply chains (Safar et al., 2015). Global economic expansion has forced companies to build global rather than local supply chains. While global supply chains aim for timely material availability and cost reduction, they also raise environmental concerns due to resource consumption and pollution. Hence, improving resource efficiency and reducing environmental impacts have become key issues (Song & Gao, 2017). Retailers are expected to take responsibility for the environmental impacts of their supply chains, fostering environmental awareness and sustainability across all supply chain stages. They collaborate with suppliers, customers, governments, NGOs, and other stakeholders to promote environmental sustainability (Patlejch et al., 2018).

Since negative environmental impacts occur throughout a product's life cycle and are not limited to internal operations, the green supply chain management perspective has received considerable attention (Marvati-Sharifabadi et al., 2016).

Waste management was ranked fourth. As a developing country undergoing industrialization, Iran has faced environmental issues, pollution, and energy overuse in recent decades. Rapid industrial growth, outdated technologies, and inefficient management have led to overconsumption of resources. High levels of urban and commercial waste pollution demand serious attention to proper disposal or recycling (Hassanzadeh, 2017).

Water and energy management ranked fifth. Like many countries, Iran suffers from high air pollution, poor water quality, noise pollution, and fast depletion of energy resources. These environmental problems stem mainly from unsustainable consumption patterns. Even small lifestyle changes can significantly contribute to addressing these issues (Shirkhodai et al., 2017).

Globally, over 820 million people suffer from hunger and malnutrition. Food waste costs an estimated $2.6 trillion annually, including $1 trillion in economic losses, $700 billion in environmental costs, and $900 billion in social costs (Ali et al., 2019). According to the UN, if food waste were a country, it would be the third-largest emitter of greenhouse gases. About 1.3 billion tons of food — one-third of all food suitable for human consumption — is wasted globally each year (Reisinger & Hubner, 2022).

A significant portion of downstream food supply chain waste is due to supply mismatches, demand estimation errors, communication problems between suppliers and retailers, and consumers rejecting less-than-perfect items (Khan et al., 2020). Iran's economic and environmental conditions create a destructive chain from production to consumption. On one end, manufacturers produce expensive and hazardous goods;

on the other, many consumers use these products, contributing to resource waste, environmental harm, and public health risks. This disorganized linear model of production and consumption leads to pollution, disease, and significant economic strain (Azizi & Khosravipour, 2021). The Iranian economy urgently needs to address waste and loss, as unchecked production and consumption patterns threaten the country's infrastructure and resources (Haravi Talemi & Ziaziabari, 2021). According to the FAO, 134 kilocalories of food are wasted per person each day in Iran, placing the country among the highest food waste producers globally (Pishdar et al., 2024).

Many studies seek solutions to reduce waste and losses. Tomasiga et al. (2022) examined global population growth and increasing consumption, which contribute to food and item waste. Despite the challenges, waste

can be a valuable resource. Their study emphasizes the need for collaboration between governments, private sectors, academics, and researchers. They also stress the need to quantify waste and associated greenhouse gas emissions throughout the food value chain. DeSouza et al. (2021) explored how downstream supply chain strategies using digital technologies — like big data analytics — can reduce food waste. They found that efforts should start with understanding food spoilage processes. Measures such as price management, sales strategies, operations, and purchasing — supported by technologies like sensors and augmented reality — can improve dynamic pricing, storage, and display. These digital tools can help supermarkets enhance sustainability and benefit both consumers and social welfare.

Recommendations

1) Retailers should consider waste management (waste separation, re-packaging, etc.) to preserve environmental performance.
2) Food retailers should adopt a circular economy approach and reduce all sources of pollution, as it benefits both environmental and economic performance.
3) Regulations and criteria should be established to reduce energy consumption and associated costs.
4) Environmental awareness and knowledge among retail managers should be promoted through educational workshops and training.
5) Public campaigns should be conducted to inform people about the benefits of the circular economy.
6) Retailers should evaluate and select suppliers based on environmental criteria, due to their impact on overall economic performance.
7) Use applications to inform the public about unsold items with lower quality grades, enabling locals to purchase them at a discount and prevent waste.
8) Employee training in electricity and water conservation should be prioritized, and retail managers should invest in these efforts.
9) Overall, based on the findings, businesses are encouraged to transition from traditional to circular economic models.

References

Yazdi, N., & Hayati, D. (2013). Waste reduction: A future-oriented approach in extension. Journal of Agricultural Engineering and Natural Resources, 10(39), 24–30.

Bigbabai, A., & Bashrooei Shargh, S. (2023). Comparison of food waste in Iran and the world and offering solutions for improvement. First National Conference on Food Security, Food Safety, and Health, Mashhad, Iran.

Aghalar, H., & Aghalar, M. A. (2023). Factors affecting food waste generation by consumers at the retail level. 12th International Conference on Industrial Engineering, Productivity and Quality, Tbilisi, Georgia.

Pishdar, M., Seyed Hashemi, M. R., Poorghader Choubar, A., & Sadri, M. S. (2024). Identification and evaluation of strategies to reduce fruit and vegetable losses at retail and consumer levels. Systems Engineering and Productivity, 4(2), 25–44.

Hassanzadeh, M. (2017). Identification and analysis of factors influencing the implementation of green supply chain management and its impact on performance improvement (Case Study) [Master's thesis, Alzahra University].

Khosravani, F., Pezeshkirad, G., & Farhadian, H. (2016). Analysis of consumer behavior components related to food waste in Tehran. Journal of Food Science and Industries, 53(13), 173–183.

Ranjbaran, R., Shabani, T., Nourbakhsh, M., & Shahsoni, L. (2023). The role of food waste in food security. 7th International Conference on Interdisciplinary Studies in Food Industry and Nutrition Sciences, Tehran, Iran.

Salari, A., & Moradi, S. L. (2024). From waste to life: Realization of circular economy and sustainable waste management in Shiraz. International Conference on Urban Environmental Management, Shiraz, Iran.

Sourani, F., & Ahmadvand, M. (2019). Household food waste and influencing factors in Najafabad County. Journal of Research in Agricultural Economics and Development of Iran, 50(2), 281–294.

Shahsoni Mojarad, L., & Madikhani, S. (2021). Factors influencing the reduction of food waste. 5th International Congress on Agricultural Development, Natural Resources, Environment and Tourism, Tabriz, Iran.

Shahdkar, F., Torabi, T., & Rahnamay Roodposhti, F. (2021). Identification and prioritization of factors affecting the implementation of the circular economy in SMEs. Journal of Applied Economic Theories, 11(38), 1–14.

Shirkhodai, M., Ehsani, M., & Sattari, M. (2017). The impact of environmental concerns on green product purchasing in retailing (Case: Customers of all retailers in Qaemshahr). First National Conference on Application of Modern Research in Humanities, Qaemshahr, Iran.

Sadri, M. S. (2023). Identification and evaluation of strategies for reducing food waste at the retail

and consumer levels [Master's thesis, University of Tehran].

Safar, M. M., Shakouri Ganjavi, H., & Razmi, J. (2017). Designing a green closed-loop supply chain considering operational risks under uncertainty using NSGA-II algorithm. Industrial Engineering Journal, 49(1), 55–68.

Azizi, A., & Khosravipour, B. (2021). Strategies for reducing and recycling food waste. First National Conference on Green Waste Management, Ardabil, Iran.

Fakhraei, M. M. (2024). Role model for selective waste collectors (waste pickers) in improving and enhancing the circular economy with the help of municipalities, NGOs, cooperatives, and associations. International Conference on Urban Environmental Management, Shiraz, Iran.

Falahati, S., Saadatnia, M., Ghanoati, E., Sheikholeslam Tankabeni, A., & Moazazi, Sh. (2022). Reducing food waste in retail stores. 5th National Conference on New Technologies in Food Science and Management, Tehran, Iran.

Ghorbanpour, A., Jalali, R., Parsa, H., & Hajiani, P. (2022). Discriminant analysis of food industry clusters based on circular economy components. Journal of Economic Research (Growth and Sustainable Development), 22(1), 33–52.

Morovati Sharifabadi, A., Mirghafouri, S. H., & Saebi Nasimabadi, V. (2016). Sustainable supply chain management: Benefits, barriers, and drivers. First International Conference on New Paradigms in Business and Organizational Intelligence Management, Tehran, Iran.

Moudi, K., & Hosseini, S. M. (2017). Consumer behavior and its impact on the retail industry and supply chain in industrial retail environments. National Conference on Scientific Research in Management,Accounting, Law, and Social Sciences, Shiraz, Iran.

Haravi Talemi, S. N., & Ziaziabari, F. (2021). Processing of by-products and food waste. 7th International Conference on Food Industry Sciences, Organic Agriculture and Food Security, Tbilisi, Georgia.

Yeganeh, S., Ebrahimi, K., & Rezaei, N. (2024). Optimal waste management and circular economy in Shiraz: A strategy for sustainable development. International Conference on Urban Environmental Management, Shiraz, Iran.

Ali, S.M., Moktadir, M.A., Kabir, G., Chakma, J., Rumi, M.J.U., & Islam, M.T. (2019). Framework for evaluating risks in food supply chain: implications in food wastage reduction. J. Clean. Prod. 228, 786–800.

Aschemann-Witzel, J., Randers, L., & Pedersen, S. (2023). Retail or consumer responsibility? — Reflections on food waste and food prices among deal-prone consumers and market actors. Business Strategy and the Environment, 32(4), 1513-1528.

Brancoli, P., Rousta, K., & Bolton, K. (2017). Life cycle assessment of supermarket food waste. Resources, Conservation and Recycling, 118 (2017) 39–46.

Boulet, M., Hoek, A. C., & Raven, R. (2021). Towards a multi-level framework of household food waste and consumer behaviour: Untangling spaghetti soup. Appetite, 156, 104856.

Cicatiello, C., Franco, S., Pancino, B., & Blasi, E. (2016). The value of food waste: An exploratory study on retailing. J. Retail. Consum. Serv. 2016, 30, 96–104.

Deksne, J., Litavniece, L., Jelena Lonska, J., & Zvaigzne, A. (2023). CIRCULAR ECONOMY STRATEGIES FOR REDUCING FOOD WASTE IN SCHOOLS: A SYSTEMATIC LITERATURE REVIEW. Journal of Regional Economic and Social Development, 15, 29-39.

de Souza, M., Pereira, G.M., Lopes de Sousa Jabbour, A.B., Chiappetta Jabbour, C.J., Trento, L.R., Borchardt, M., & Zvirtes, L. (2021). A digitally enabled circular economy for mitigating food waste: Understanding innovative marketing strategies in the context of an emerging economy. Technological Forecasting and Social Change, Elsevier, vol. 173(C).

FAO. (2011). Global food losses and food waste. Rome: Food and Agriculture Organization.

FAO. (2019). The State of Food Security and Nutrition in the World: Safeguarding against Economic Slowdowns and Downturns; State of the

World. Food and Agriculture Organization of the United Nations: Rome, Italy, 2019.

Hong, J., Zhang, Y., & Ding, N. (2017). Sustainable supply chain management practices supply chain dynamic capabilities, and enterprise performance. Cleaner Production.

Khan, O., Daddi, T., Slabbinck, H., Kleinhans, K., Vazquez-Brust, D., & De Meester, S. (2020). Assessing the determinants of intentions and behaviors of organizations towards a circular economy for plastics. Resources, Conservation and Recycling, 163, 105069.

Mattos, C.A., Scur, G., & Albuquerque, T.L.M. (2022). Evaluation of circular business model: Theory of Change approach. Evaluation and Program Planning, Volume 92, June 2022, 102069.

Mc Carthy, U., Uysal, I., Badia-Melis, R., Mercier, S., O'Donnell, C., & Ktenioudaki, A. (2018). Global Food security- Issues, challenges and technological solutions. Trends in Food Science & Technology, Vol.

77, PP. 11-20.

Petljak, k. (2021). FOOD WASTE AND FOOD LOSS IN THE RETAIL SUPPLY CHAIN. journal for the international and european law, economics and market integrations, 8 (2), 119-132.

Riesenegger, L., & Hübner, A. (2022). Reducing FoodWaste at Retail Stores—An Explorative Study. Sustainability, 14, 2494.

Saha, A. (2023). Circular Economy Strategies for Sustainable Waste Management in the Food Industry. Journal of Recycling Economy & Sustainability Policy, 2(2), 1-15.

Schuster, M., & Torero, M. (2016). Toward a sustainable food system: Reducing food loss and waste. IFPRI book chapters, in: 2016 Global Food Policy Report, chapter 3, pages 22-31, International Food Policy Research Institute (IFPRI).

Schmidt, K., & Matthies, E. (2018). Where to start fighting the food waste problem? Identifying most promising entry points for intervention programs to reduce household food waste and overconsumption of food. Resources, Conservation & Recycling, 139, 1-14.

Song, H., & Gao, X. (2017). Green supply chain game model and analysis under revenuesharing contract. Journal of Cleaner Production. 10.1016/j.jclepro.2017.09.138.

Stenmarck, A., Jensen, C., Quested, T., & Moates, G. (2016). Estimates of European Food Waste Levels; EU-FUSIONS: Stockholm, Sweden, 2016.

Tamasiga, P., Miri, T., Onyeaka, H., & Hart, A. (2022). FoodWaste and Circular Economy: Challenges and Opportunities. Sustainability, 14(16), 9896.

Teixeira, N., Rodrigues, R., & Antunes, t. (2025). Circular Economy Models for Reducing Food Waste and Enhancing Sustainability: A Case Study of Cooperative X. Circular Economy and Sustainability, https://doi.org/10.1007/s43615-025-00571-x.

Teyfouri, A., & Rastegary, M. (2015). Food waste: The global perspectives and national outlook. Conference: First International Congress of Healthy Agriculture, Nutrition, and Community (ICANC) at Tehran. (In Farsi).