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RESEARCH ARTICLE

Developing Tourism Potential through Food Culture: Integrating Creative Economy and Circular Economy Approaches in Chanthaburi Province

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Abstract

Gastronomy tourism has emerged as an important mechanism for strengthening local economies by linking agriculture, food culture, and tourism experiences. Integrating circular economy (CE) principles into gastronomy tourism can enhance sustainability by reducing resource waste and strengthening local food systems. This study aims to (1) assess the readiness of local restaurants to adopt circular economy and Agriculture–Gastronomy–Food–Experience–Culture (AGFEC) concepts and (2) propose policy recommendations to support the transition toward sustainable gastronomy tourism in Chanthaburi Province, Thailand. A mixed-method approach was employed, combining field surveys, stakeholder interviews, and consumer questionnaires. Eight restaurants in Mueang and Tha Mai districts were evaluated using a structured readiness framework, while consumer perceptions were collected from 152 respondents who had dining experience in local restaurants. The results show that local restaurants demonstrate high readiness for CE and AGFEC adoption, with readiness scores ranging from 80 to 95 out of 100 points. Common circular practices include the use of locally sourced ingredients, waste separation, and recyclable packaging. Consumer perceptions show a generally positive attitude toward circular gastronomy initiatives (mean = 3.62), although willingness to pay additional costs for environmentally friendly packaging remains limited. The findings highlight the strong potential of Chanthaburi Province to develop circular gastronomy tourism and emphasize the importance of infrastructure development, entrepreneurial support, community capacity building, and sustainable marketing strategies.

Keywords: Circular economy, Gastronomy tourism, Local food systems, Sustainable tourism, Chanthaburi Province

Introduction

Thailand's distinctive tourist attractions and rich culinary heritage, widely recognized internationally, have positioned tourism as a key driver of the national economy. However, tourism promotion policies in recent years have largely emphasized quantitative growth, particularly revenue generation and increasing tourist arrivals. This growth-oriented approach has accelerated development in many destinations, often exceeding the carrying capacity of local resources and communities and contributing to overtourism with social, cultural, and environmental impacts.

In response to these challenges, the concept of the "Creative Economy" has gained increasing attention, emphasizing the creation of economic value from cultural capital, indigenous knowledge, and local resources (NXPO, 2019). Thailand's strong food security capacity also presents an opportunity to position the country as the "clean, safe, and internationally standardized kitchen of the world" (Department of Agricultural Extension, 2022). National development strategies therefore encourage the integration of gastronomy tourism with agricultural development in order to create authentic tourism experiences while promoting health-conscious cuisine and environmentally sustainable tourism practices (Chaisen, 2019; Yokkhun et al., 2020).

Gastronomy tourism connects three key sectors: agriculture, which produces local raw materials; food

services, where culinary techniques transform these materials into gastronomic products (Smith & Xiao, 2008); and tourism and marketing, which design and promote food-based experiences. Andersson et al. (2017) conceptualized this integration as a "Food Tourism Cluster", highlighting its role in attracting gastronomy-oriented tourists, supporting local producers, strengthening culinary branding, and enhancing tourism product quality.

Beyond its economic value, gastronomy tourism also supports local livelihoods through food-related activities such as community markets, culinary festivals, agritourism, and local restaurants. In this context, food functions not only as a commodity but also as a cultural medium that communicates local identity and enhances destination attractiveness (NSTDA, 2020). In secondary tourism destinations, local restaurants and food-related SMEs play a particularly important role because they directly connect local producers, cultural heritage, and tourism experiences within local economies. Strengthening the sustainability readiness of these businesses is therefore important for supporting long-term tourism competitiveness, local economic resilience, and environmentally responsible destination development.

At the same time, growing environmental concerns related to food waste, packaging waste, and unsustainable resource consumption have increased attention toward the application of circular economy (CE) principles in food and tourism businesses. In restaurant operations, CE practices commonly include food waste reduction, recycling and reuse of packaging materials, local sourcing of ingredients, resource circulation, and the utilization of food by-products within local food systems (Gálvez Nogales et al., 2023; Filimonau & De Coteau, 2019). For local gastronomy small and medium-sized enterprises (SMEs), the adoption of CE practices may contribute not only to environmental sustainability, but also to local value creation, food system resilience, and sustainable tourism development. However, previous studies suggest that CE implementation in food service businesses often remains limited to operational waste management practices rather than broader systemic integration across gastronomy supply chains (Rizos et al., 2016).

Within the Eastern Economic Corridor (EEC), Chanthaburi Province represents a secondary destination with strong potential for gastronomy tourism due to its rich agricultural resources and distinctive local cuisine. The province is well known for premium tropical fruits such as durian, mangosteen, rambutan, and pepper, as well as unique culinary specialties including Moo Chamuang (Eastern Thai Braised Pork with cowa leaves) and stir-fried Chanthaburi noodles with crab. This potential aligns with the government's Bio-Circular-Green Economy (BCG) model, which promotes sustainable economic development through the integration of agriculture, food industries, and tourism.

Despite growing research on gastronomy tourism and sustainable food systems, empirical studies integrating circular economy principles into gastronomy tourism at the local SMEs level remain limited, particularly in emerging destinations in developing countries. Previous research has mainly focused on food tourism experiences, destination branding, and culinary identity, while the readiness of local restaurants to adopt circular economy practices within gastronomy tourism supply chains has received limited attention. Furthermore, the interaction between circular economy practices, local food identity, and consumer perceptions in secondary tourism destinations remains underexplored.

This study therefore aims to: (1) assess the readiness of local restaurants to adopt circular economy principles within the gastronomy tourism sector in Chanthaburi Province; and (2) examine how circular economy practices, local food systems, and consumer perceptions interact within the gastronomy tourism supply chain. The findings are expected to contribute to a better understanding of how circular economy and Agriculture– Gastronomy– Food– Experience– Culture (AGFEC) concepts can be operationalized in gastronomy tourism development and support collaboration among entrepreneurs, local authorities, and communities in promoting sustainable tourism and strengthening the local economy.

Literature review

Circular economy in gastronomy and food service businesses

CE has gained increasing attention as an alternative development paradigm aimed at addressing environmental degradation while supporting sustainable

economic growth. Unlike the traditional linear model of production and disposal, the CE emphasizes resource efficiency, waste reduction, material reuse, and circulation within production and consumption systems (Ellen MacArthur Foundation, 2019). In the food sector, these principles are particularly important due to the high levels of food waste, intensive resource use, and environmental impacts associated with food production and consumption.

In gastronomy and food service operations, CE practices commonly include reducing food waste, separating and repurposing organic waste, recycling packaging materials, and promoting reusable container systems (Gálvez Nogales et al., 2023). Restaurants play a central role in applying CE principles because they operate at the intersection of food production, culinary preparation, and consumer consumption. However, previous studies suggest that CE practices in food service businesses are often implemented in a limited and practical manner, focusing mainly on waste management and recycling rather than achieving systemic resource circulation across the supply chain (Rizos et al., 2016).

Among SMEs, including local restaurants, the adoption of CE practices varies considerably. While many food businesses demonstrate awareness of waste reduction and environmental responsibility, constraints related to financial resources, technical knowledge, and policy support often limit implementation to basic waste management activities (Phanthanawibool & Thavorn, 2023; Chindaprasert & Wiwattanakornwong, 2024). Nevertheless, local food service businesses possess advantages for CE implementation due to their close connections with local suppliers and communities, which can facilitate localized circular resource flows (Gálvez Nogales et al., 2023). Therefore, examining the readiness of local gastronomy businesses to adopt CE practices is essential for understanding how circular economy principles can be integrated into food-based tourism and local development strategies.

Gastronomy tourism and local food as cultural and experiential value

Gastronomy tourism has emerged as an important tourism development approach that positions food as a cultural and experiential destination asset rather than merely a supporting service. It integrates agricultural production, culinary traditions, and tourism experiences, allowing food to function as a medium for cultural representation, storytelling, and destination differentiation (Smith & Xiao, 2008; Andersson et al., 2017).

Local food plays a central role in gastronomy tourism because it reflects regional identity, biodiversity, and traditional knowledge systems. Research indicates that contemporary tourists increasingly seek authentic culinary experiences that enable them to engage with local culture and everyday lifestyles (Yokkhun et al., 2020). Consequently, traditional dishes, local ingredients, and culinary techniques represent valuable tourism assets, particularly in destinations pursuing sustainable and community-based tourism development (UNESCO, 2021).

For secondary cities and emerging destinations, gastronomy tourism offers opportunities to enhance tourism value while reducing reliance on mass tourism models. By emphasizing cultural authenticity and uniqueness, gastronomy tourism can generate income for local producers, strengthen local food systems, and support cultural heritage preservation (Chaisen, 2019). However, studies also highlight tensions between preserving traditional food identity and introducing culinary innovation. While creative menu development and fusion cuisine are often promoted to attract tourists, many consumers still prefer familiar flavors rooted in local food traditions (Tagong & Apichayakul, 2023). These findings indicate that successful gastronomy tourism development requires balancing culinary innovation with the preservation of local food identity while integrating environmentally responsible practices.

AGFEC and sustainable gastronomy development

The AGFEC framework refers to the integration of Agriculture, Gastronomy, Food, Experience, and Culture approaches within sustainable local development systems. The framework emphasizes the connection between local agricultural production, culinary identity, tourism experiences, and creative value creation as an integrated system supporting sustainable gastronomy tourism development.

Unlike conventional gastronomy tourism approaches that primarily focus on food consumption

and destination attractiveness, AGFEC highlights the broader relationships among local resource utilization, cultural identity, tourism experiences, community participation, and economic sustainability. The framework positions local food not only as a tourism product, but also as a mechanism for strengthening local value chains, preserving cultural heritage, and promoting environmentally responsible development.

In the context of sustainable tourism, AGFEC shares important conceptual linkages with circular economy principles. Both approaches emphasize local resource efficiency, waste reduction, short supply chains, and the circulation of value within local production and consumption systems. Previous studies have suggested that localized gastronomy systems can contribute to sustainability by supporting community-based food networks, reducing transportation- related impacts, and strengthening regional economic resilience (Gálvez Nogales et al., 2023; UNESCO, 2021).

The AGFEC framework is particularly relevant in the Thai context, where gastronomy tourism and creative economy policies have increasingly been promoted under the BCG Economy Model. National initiatives such as the "Amazing Thailand Culinary City" project emphasize the integration of local food identity, tourism experiences, and sustainable development to enhance regional competitiveness and cultural value creation (PR Newswire, 2023).

Readiness and adoption of sustainable practices in food-related SMEs

The concept of readiness is widely used in sustainability and organizational research to describe an organization's capacity to adopt new practices or policy frameworks. Readiness for sustainability adoption refers to the extent to which organizations possess the awareness, resources, capabilities, and institutional support necessary to implement environmentally responsible practices (Rizos et al., 2016). In the food sector, readiness is an important factor determining whether sustainability initiatives such as circular economy practices can be effectively implemented.

For food-related SMEs, readiness is influenced by both internal and external factors, including managerial commitment, employee involvement, financial and technical resources, regulatory frameworks, and consumer demand (Phanthanawibool & Thavorn, 2023). Previous studies show that many SMEs demonstrate partial readiness, implementing basic practices such as waste separation and recycling, while more advanced sustainability initiatives remain limited (Chindaprasert & Wiwattanakornwong, 2024).

Importantly, readiness does not always lead to full implementation. High readiness levels may not translate into comprehensive sustainable practices when economic constraints, limited incentives, or uncertainty about consumer responses exist (Rizos et al., 2016). In food service contexts, this implementation gap often appears in areas such as menu innovation, health-oriented food development, and the integration of circular practices across supply chains.

Assessing readiness therefore provides valuable insights into both the capabilities and constraints of food- related SMEs. In gastronomy tourism systems, restaurants act as key intermediaries connecting local food production, cultural experiences, and tourist consumption. Understanding their readiness to adopt circular economy practices can help inform policy measures and support mechanisms for promoting sustainable gastronomy tourism development.

Previous studies on gastronomy tourism

Previous studies have highlighted the growing importance of gastronomy tourism in promoting sustainable tourism development, local economic growth, and cultural identity. A systematic review by Ali et al. (2023) identified multiple research themes linking gastronomy tourism with sustainability, local food systems, economic development, and food waste management, demonstrating the multidimensional role of food in tourism studies. Empirical studies further show that gastronomy tourism can contribute to sustainability outcomes when local food resources and cultural heritage are integrated into tourism experiences. For instance, Soltoff (2023) found that Bangkok street food markets support economic and social sustainability, although environmental sustainability practices remain limited. Similarly, Stalmirska and Ali (2023) emphasized that local food suppliers play a crucial role in connecting globalization with local food identity to create authentic tourism experiences that enhance cultural and social sustainability in destinations. Studies in other contexts also demonstrate that gastronomy tourism can strengthen local identity

and stakeholder collaboration. Putra (2019) revealed that the culinary identity of Cirebon City in Indonesia, shaped by multicultural influences, contributes to sustainable tourism experiences and destination development. Furthermore, Pérez-Priego et al. (2023) showed that local food attributes and traditional dining establishments significantly influence tourist satisfaction and destination choice. Despite these contributions, existing research has paid limited attention to the integration of circular economy principles within gastronomy tourism systems, particularly in the context of local restaurant operations and supply chains. This gap highlights the need for empirical research examining how circular economy concepts can support sustainable gastronomy tourism development.

Methodology

Study area and target group

Chanthaburi Province was chosen as the study area to evaluate the readiness and impacts of circular economy adoption in the gastronomy tourism sector. As a secondary coastal destination in eastern Thailand, Chanthaburi is renowned for its seafood and has become a popular choice among domestic tourists.

This study targeted restaurants and food-related enterprises along the supply chain in Mueang and Tha Mai districts, Chanthaburi Province, together with consumers aged 18 and over, including both locals and tourists, who used restaurant services in these areas.

Questionnaire design and sampling

Overall readiness assessment of local restaurants

An overall assessment was conducted to examine the readiness of local restaurants in Mueang and Tha Mai districts, Chanthaburi Province, to adopt CE and AGFEC concepts in their business operations. The study focused on an exploratory assessment of early adopters in the local gastronomy tourism sector in order to understand initial implementation patterns and operational readiness toward sustainable food tourism practices.

The research team conducted preliminary field surveys and invited local restaurants to participate in semi-structured interviews regarding operational practices related to CE and AGFEC implementation. A total of eight restaurants voluntarily participated in the assessment process. The participating restaurants were locally owned small- and medium-sized enterprises (SMEs) located in Mueang and Tha Mai districts, Chanthaburi Province. Most were seafood and local gastronomy restaurants serving domestic tourists and local residents.

Restaurants were initially identified through preliminary field surveys and local gastronomy networks within the study area. Selection criteria included: (1) being locally operated food businesses within the target districts, (2) willingness to participate in interviews and field assessments, and (3) operational relevance to gastronomy tourism and local food systems.

Since this study was designed as an exploratory investigation focusing on operational readiness toward CE and AGFEC practices, the participating restaurants were selected to provide preliminary insights into implementation patterns and adaptation processes among local gastronomy SMEs within the study context, rather than to statistically represent all restaurants in Chanthaburi Province.

The restaurant readiness assessment form was developed based on concepts and literature related to circular economy practices, sustainable gastronomy, local food systems, and zero-waste restaurant management (Camilleri, 2019; Renfors & Wendt, 2024). Key assessment dimensions included local sourcing of ingredients, food waste utilization, sustainable packaging practices, seasonal menu adaptation, cultural food storytelling, and resource circulation within restaurant operations. These dimensions were adapted from previous studies emphasizing sustainable gastronomy development, circular restaurant management, and local food value chain creation (Filimonau & De Coteau, 2019; Dhir et al., 2020; Renfors & Wendt, 2024).

To improve content validity and consistency with the research objectives, the restaurant readiness assessment form was reviewed by two experts in tourism and sustainability studies. The experts evaluated the relevance, clarity, and appropriateness of the assessment indicators in relation to CE and AGFEC concepts. Revisions to wording and indicator descriptions were subsequently made according to the experts' recommendations prior to data collection.

The assessment form consisted of eight indicators with weighted scores totaling 100 points. Different weights were assigned to each indicator according to their relevance to circular resource management, local value creation, and sustainable gastronomy practices. Restaurants scoring above 60 points were considered to demonstrate preliminary readiness and operational potential for participating in CE and AGFEC implementation activities. In addition to the assessment score, participating restaurants were required to express clear willingness to collaborate with the research team in field activities, implementation support, and follow-up evaluation processes.

As this study represents an exploratory investigation within an emerging research context, the readiness assessment was intended to provide preliminary insights into the operational characteristics and implementation potential of local restaurants rather than to establish a standardized certification system.

Restaurant prototypes interested in implementing of CE and AGFEC, and in- depth readiness assessment

Following the preliminary readiness assessment, two restaurants located in Mueang and Tha Mai districts demonstrated strong interest and operational potential for participating as prototype restaurants for CE and AGFEC implementation. These restaurants voluntarily agreed to collaborate with the research team in pilot implementation activities and follow-up assessments.

An in- depth readiness assessment was subsequently conducted to evaluate the prototype restaurants' knowledge, operational capability, and implementation potential regarding CE and AGFEC practices. In addition, the assessment process included the development of a food system mapping framework to identify relationships among suppliers, local ingredients, food production processes, waste management practices, and gastronomy tourism activities throughout the restaurant supply chain.

The in- depth assessment framework was developed based on concepts related to sustainable gastronomy tourism, circular economy practices, and local food value chain development (Camilleri, 2019; Filimonau & De Coteau, 2019; Dhir et al., 2020). The assessment consisted of two major dimensions: (1) AGFEC assessment, which focused on local gastronomy value creation, food culture identity, and tourism- related value chain development (five indicators), and (2) CE assessment, which emphasized resource circulation, food waste reduction, recycling practices, and the efficient utilization of local resources within restaurant operations (four indicators).

The assessment was designed to generate practical insights into the operational adaptation of CE and AGFEC concepts in local gastronomy businesses and to support the development of prototype models for sustainable food tourism in Chanthaburi Province.

The survey of consumer opinions

This research applied qualitative and quantitative methodologies through questionnaire and field survey. Primary data plays a crucial role in examining consumer opinions, providing valuable insights for the study (Chrysochou, 2017). The questionnaire was developed based on concepts and literature related to circular economy, sustainable tourism, and consumer behavior in food tourism contexts.

To improve content validity and consistency with the research objectives, the customer questionnaire was reviewed by two experts in tourism and sustainability studies. The experts evaluated the relevance, clarity, and appropriateness of the questionnaire items in relation to CE and AGFEC concepts. Revisions were subsequently made according to the experts' recommendations prior to data collection.

A pilot test was conducted with 30 respondents prior to the actual survey in order to evaluate the clarity and reliability of the questionnaire. In addition, reliability analysis was performed using Cronbach's alpha coefficient to examine the internal consistency of the consumer perception scale. The results demonstrated acceptable reliability, with Cronbach's alpha values exceeding the recommended threshold of 0.70.

The final questionnaire, written in Thai, consisted of two sections: the first section collected demographic and general background information of the respondents, while the second section examined consumer opinions regarding the implementation of circular economy practices in local food and cultural tourism business. Consumer opinions were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

An online questionnaire (Google Forms) was used to collect data from consumers aged 18 years and above, including both local residents and tourists who had dined at restaurants in Mueang and Tha Mai districts. A total of 152 respondents were recruited using a combination of purposive and snowball sampling techniques, including referrals from individuals and experts, as well as direct recruitment of restaurant customers. As this study represents an exploratory investigation in an emerging research context, non-probability sampling techniques were considered appropriate for obtaining preliminary insights into consumer perceptions toward circular economy practices in local gastronomy tourism.

Ethical approval for this study was obtained from the Human Research Ethics Committee of the National Institute of Development Administration (NIDA), Thailand (Approval Code: ECNIDA 2024/0213). All participants provided informed consent prior to their inclusion in the study, in accordance with the ethical principles for research involving human subjects.

Data analysis

The collected data were analyzed using descriptive statistical methods. Frequency, percentage, mean, and standard deviation were used to summarize respondents' demographic characteristics, the readiness of local restaurants, and consumer perceptions regarding the implementation of CE and AGFEC practices in local restaurant businesses. In addition, independent sample t-tests and one-way analysis of variance (ANOVA) were conducted to examine differences in consumer perceptions across demographic groups.

Results

Overall readiness assessment of local restaurants

The evaluation results of the eight restaurants showed scores ranging from 80 to 95 points, indicating that the restaurants are ready to implement the circular economy and AGFEC in their operations. However, considering each indicator (Table 1), three indicators that most restaurants have not yet implemented are: (1) menu adjustments based on local seasonal vegetables or animal proteins (2) fusion food menus that use local ingredients rather than imported ingredients, and (3) food plating using natural and local ingredients. This is because most restaurants prepare food according to the menu (fixed menu structures) and season it according to the restaurant's recipe (standardized flavor profiles). Only a few restaurants adjust flavors to meet consumer needs, such as sour, sweet, salty. However, the researchers set the low score criteria for these three indicators at 10, 5, and 5 points, respectively, to provide special points for existing restaurants only.

Restaurant prototypes interested in implementing of CE and AGFEC, and readiness assessment

Two local restaurants were interested in joining as prototype restaurants that have adopted the circular economy and AGFEC in their operations, namely restaurants in Muang and Tha Mai districts. There has been an in-depth assessment of readiness to adopt CE and AGFEC and the creation of a food system map that connects the entire supply chain of the restaurant.

Restaurant prototype in Tha Mai district

From the assessment of restaurant readiness using the criteria for selecting restaurants interested in implementing CE and AGFEC, it was found that this restaurant achieved an assessment score of 85 out of 100 points, indicating that it has already incorporated CE and AGFEC practices into its operations. The in-depth assessment results on readiness to implement CE and AGFEC are as follows:

1) The main raw materials used in this seafood restaurant are fish, shrimp, and squid, along with a local specialty dish, Moo Chamuang. The primary target customers are Thai tourists.

2) The main sources of raw materials such as shrimp, squid, crab, and shark/stingray are purchased from middlemen at the Chao Lao Fish Bridge. Secondary ingredients, including fresh vegetables, are obtained from the Bowling Market. All seasonings are purchased from the local Makro, except shrimp paste, which is directly sourced from local fishermen who produce it.

3) The restaurant separates food waste and fresh vegetable scraps, which are given to nearby villagers for use as animal feed (for ducks and chickens). However, chicken and duck are not reused as raw materials in the restaurant, as its main menu focuses on seafood.

4) Regarding food safety, the restaurant has received food safety promotion and inspections from the Provincial Public Health Office and the local municipality. It has also been certified under the Clean Food Good Taste program.

5) The restaurant's packaging management emphasizes waste reduction. Ingredient and food packaging materials are reusable or recyclable, such as plastic beverage bottles and condiment containers, which are sorted and sold to scrap dealers for recycling. Ice buckets are used to store the main ingredients (aquatic animals), they are cleaned and reused until worn out. Food containers (cups and plates) are made of melamine, which can also be cleaned and reused until no longer usable.

6) The menu and flavors are prepared according to the restaurant's standards; however, guests may request customized levels of spiciness, sourness, or sweetness. The restaurant does not provide decorative plate garnishes, as some customers may be allergic to flower pollen or substances from such decorations.

Table 1 The readiness assessment for the CE and AGFEC adoption in restaurants

No.	Items/Indicators	Restaurant (n)	%
1	There is a policy promoting the circular economy in the food business.	8	100
2	More than 70% of the ingredients or raw materials used in food preparation are locally sourced or obtained from local suppliers.	8	100
3	There are menu items associated with circular food practices, such as the reuse of food scraps and vegetable waste as compost or animal feed through collaboration with local farmers, with agricultural outputs subsequently circulated back into restaurant operations as cooking ingredients to support zero- waste and sustainable food practices (at least one menu item).	8	100
4	There is a local food menu associated with local stories and culinary cultural heritage (at least one menu item)	6	75
5	Packaging for raw material and food, as well as restaurant management practices, focuses on reducing food waste and food loss.	8	100
6	There are menu items that adapt to locally available seasonal vegetables or animal protein sources (at least one menu item).	2	25
7	There are fusion food menu items that incorporate local ingredients unique to the area (at least one menu item).	2	25
8	Food plating incorporates natural and locally sourced materials.	4	50

Based on the above assessment, the restaurant has implemented policies that promote Circular Economy practices in its operations, emphasizing food waste reduction, packaging waste minimization, and material recycling. Moreover, the restaurant integrates elements of AGFEC to enhance the value of gastronomy tourism. This is reflected in its use of locally sourced primary and secondary ingredients to create distinctive regional dishes, as well as its strong emphasis on food safety. However, the restaurant has not yet placed significant emphasis on developing healthy food menus.

Restaurant prototype in Muang district

According to the readiness assessment based on the criteria for selecting restaurants interested in adopting CE and AGFEC, this restaurant obtained a total score of 95 out of 100, suggesting a high level of integration of CE and AGFEC practices within its operations. The detailed results of the readiness evaluation are summarized as follows:

1) This is one of the oldest seafood restaurants in Chanthaburi Province. Its main raw materials include shrimp, shellfish, crab, squid, and fish, as well as a local specialty dish, Moo Chamuang. The primary customer group consists of Thai tourists.

2) The main raw material sources are supplied directly to the restaurant by local middlemen. Secondary ingredients, such as fresh vegetables and side dishes, are partly sourced from a small kitchen garden behind the restaurant. In addition, the restaurant purchases homegrown vegetables from its employees, such as mushrooms, lemongrass, holy basil, and sweet basil. Salad vegetables used as side dishes and plate garnishes are supplied by a salad farm located in Tha Mai District. Seasonings are purchased from local shops, except for shrimp paste, which is sourced directly from local fishing groups that process the product themselves.

3) Food waste and fresh vegetable scraps generated by the restaurant were previously separated and given to nearby villagers for use as animal feed (for ducks and chickens). Currently, the restaurant plans to establish its own layer chicken farm, where food and vegetable scraps will be reused as animal feed, and the eggs will be circulated back as raw materials for cooking in the restaurant.

4) In terms of food safety, the restaurant has received support and promotion from the Provincial Public Health Office and regular inspections from the local municipality. It has also been certified under the Clean Food Good Taste program.

5) The restaurant's packaging management emphasizes waste reduction. Ingredient and food packaging materials are reusable or recyclable, such as plastic beverage bottles and condiment containers. These are sorted by employees and sold to scrap dealers, providing an additional source of income. Ice buckets are used to store the main ingredients (aquatic animals) and can be cleaned and reused until they are worn out. Food containers (cups and plates) are made of melamine, which can also be cleaned and reused until no longer usable.

6) The menu and flavors are set according to the restaurant's standards; however, customers may request adjustments to the level of spiciness, sourness, or sweetness. Dishes are decorated with salad vegetables. Although the restaurant has not yet focused on developing healthy food menus, it incorporates local herbs such as lemongrass, holy basil, ginger, galangal, and sweet basil as natural ingredients to enhance both flavor and nutritional value.

The assessment results indicate that the restaurant has seriously implemented the Circular Economy concept in its operations, focusing on reducing food waste, minimizing packaging waste, promoting material recycling, and utilize food scraps, all part of the sustainable resource management cycle. Furthermore, the restaurant has incorporated AGFEC components into its operations to add value to culinary tourism, as evidenced by its use of locally sourced primary and secondary ingredients to create distinctive regional dishes and its strong commitment to food safety.

Preliminary assessment of local raw material potential and the integrated food system across the area's supply chain

Supporting components included area potential, food security, supply chain connectivity, and enabling factors (such as policies promoting gastronomy tourism and the integration of knowledge from experts and relevant agencies). These elements were used to assess the readiness and potential of local raw materials.

Area potential and food security

This section considers the promotion of local fisheries by government agencies, as well as the establishment of stakeholder networks that contribute to the stability of aquatic raw material resources in the area.

From interviews with middlemen who purchase aquatic animals from local fishers, it was found that, in terms of fisheries promotion in the area, the Department of Fisheries serves as the main agency responsible for supporting and enhancing the area's potential and food security. In addition, the Marine Department oversees infrastructure management and the regulation of local piers. Therefore, the research team further investigated related agencies, projects, and missions involved in fisheries promotion in the area, as presented in Table 2.

Supply chain connectivity and enabling factors

The prototype food system map connecting the entire supply chain of the area (Figure 1) illustrates that the region possesses an integrated food system linking the distribution routes of raw materials to create gastronomic value. This system demonstrates collaboration within the gastronomy tourism cluster, encompassing the upstream sector (fishers and piers), the midstream sector (middlemen, markets, and restaurants), and the downstream sector (consumers).

In addition, there are 43 fishing piers located along the coastal areas of Tha Mai and Laem Sing districts. These infrastructures have developed through market mechanisms for raw material distribution, government policies promoting regional development, and the cooperation of local stakeholders. As a result, the system strengthens the connectivity and accessibility of seafood distribution channels for both businesses and the general public.

Based on these findings and the area's resource potential, food security, supply chain connectivity, and supporting factors indicate that the region possesses strong readiness and capacity for raw material production to support the development of the local gastronomy tourism cluster.

Table 2 Examples of government agencies/projects with missions to promote fisheries in Chanthaburi

No.	Government agencies/projects	Related missions
1	Chanthaburi Coastal Aquaculture Research and Development Center, Department of Fisheries	- Production of aquatic animal breeds. - Inspection and certification of fishery product quality. - Example of a special project: Production and marketing of marine shrimp for domestic consumption.
2	Ao Kung Kraben Royal Development Study Center, Department of Fisheries	Example of the Center's missions: - Promotion of coastal aquaculture for local farmers, such as black tiger shrimp, white shrimp (*Penaeus vannamei*), seabass, and blue swimming crab. - Demonstration units for cage aquaculture and an aquatic species exhibition center established in honor of His Majesty the King. - Aquatic animal clinic services (basic disease diagnosis and analysis).
3	Blue Swimming Crab Bank Project, Department of Fisheries	- Operated under Ao Kung Kraben Royal Development Study Center in Chanthaburi Province, in collaboration with local fishers. The project collects ovigerous blue swimming crabs from fishing activities to hatch their eggs before the female crabs are utilized. Juvenile crabs are then released back into the sea. - Establishment of community networks with the provision of equipment and knowledge transfer to support local crab banks in various communities, helping increase crab populations both inside and outside Ao Kung Kraben, ensuring year-round crab availability.
4	Marine Department, Ministry of Transport	Examples of missions related to local piers: - Supervision of vessels and labor in port areas. - Regulation of water transportation and maritime commerce. - Development of water transport infrastructure within responsible areas.

The survey of consumer opinions on the implementation of CE and AGFEC in local restaurants

Demographic characteristics of respondents

Among the 152 consumer respondents, most were tourists from other provinces (91.4%), predominantly female (61.5%), and members of Generation Z (aged 18-27 years, 46.7%). The majority were single (65.1%), held secondary/vocational or bachelor's degrees (41.4% and 38.2% respectively), were students in higher education (35.5%) and self-employed (16.4%), and earned monthly incomes between 10,000-30,000 baht (56.5%).

Consumer perceptions toward CE and AGFEC practices

Consumer perceptions regarding the implementation of CE and AGFEC in local restaurant businesses (Table 3) indicated an overall mean score of 3.62. The majority of respondents (35.5-50.7%) agreed that restaurants should promote or support circular economy practices in their operations. Only two items received moderate levels of agreement: (1) the idea that fusion food menus can create a unique and integrative dining experience for consumers (38.2%), and (2) supporting restaurants that use environmentally friendly packaging alternatives (29.6%). The relatively lower agreement on these items may be attributed to consumers' preference for traditional recipes, which makes them less interested in fusion food. Moreover, most restaurants already use reusable containers, and since the majority of consumers dine in, alternative packaging options are perceived as unnecessary for this type of business.



Figure 1 Local gastronomy food supply chain in Chanthaburi Province
Source: Developed by the authors (2024)

Table 3 Consumers' level of agreement, percentage, mean, and standard deviation

No.	Items	Opinion level (%)					Average	S.D.
		1	2	3	4	5		
1	Having a circular economy promotion policy in restaurants increases your willingness to support the restaurant.	3.3	5.3	27.6	**49.3**	14.5	3.66	0.91
2	Local food should be prepared using more than 70% locally sourced ingredients.	4.6	11.2	27.0	**39.5**	17.8	3.55	1.05
3	Recycling food scraps (e.g. composting or animal feed) or collaborating with farmers to implement zero-waste or sustainable food practices increases your likelihood of supporting the restaurant.	2.0	8.6	25.0	**47.4**	17.1	3.69	0.92
4	Local food menus associated with stories and culinary cultural heritage encourage you to like, share, and revisit the restaurant.	2.6	5.3	25.0	**50.7**	16.4	3.73	0.89
5	You support restaurants that manage packaging and raw materials in ways that focus on reducing food waste.	5.3	6.6	25.0	**42.1**	21.1	3.67	1.05
6	Menus adapted to locally available seasonal vegetables or animal protein sources help promote food safety.	5.3	4.6	27.0	**44.1**	19.1	3.67	1.01
7	Fusion food menus can create unique culinary experiences for consumers through the combination of different food flavors.	4.6	6.6	**38.2**	31.6	19.1	3.54	1.02
8	Food presentation using natural and local materials can increase the attractiveness and value of the dining experience.	5.3	6.6	34.9	**35.5**	17.8	3.54	1.03
9	You appreciate and support restaurants that use environmentally friendly alternative packaging, such as biodegradable cups or sugarcane straws, even if additional service fees are required.	3.9	20.4	**29.6**	27.0	19.1	3.37	1.13
10	You support restaurants that provide refillable water bottles or beverages refill stations to reduce plastic bottle waste.	5.3	3.9	22.4	**44.1**	24.3	3.78	1.03
	Average opinion level						**3.62**	**1.00**

Note: *1= Disagree, 2= Slightly Agree, 3= Moderately Agree, 4= Agree Very Much, 5= Strongly Agree.*

Differences in consumer perceptions across demographic groups

To further examine consumer perceptions regarding CE and AGFEC practices in local gastronomy businesses, inferential statistical analyses were conducted using independent sample t-tests and one-way analysis of variance (ANOVA).

An independent sample t-test was performed to compare the overall perception scores between local residents and tourists. The results indicated no statistically significant difference between the two groups regarding their support for CE and AGFEC practices in local gastronomy businesses ($t = 0.50$, $p = 0.624$), suggesting relatively similar levels of support among both respondent groups.

In addition, a one-way ANOVA was conducted to examine differences in consumer perceptions across age groups. The results revealed statistically significant differences among generations ($F = 4.11$, $p = 0.008$). Older respondents demonstrated higher levels of support for CE and AGFEC practices compared with younger respondents.

The findings suggest that demographic characteristics, particularly age, may influence consumer support for sustainability-oriented gastronomy practices. However, perceptions between tourists and local residents remained relatively similar.

Table 4 Presents the results of the inferential statistical analyses

Variables	Group	Mean	S.D.	Statistical test	p-value
Overall support for CE and AGFEC practices	Local residents	3.66	0.51	t = 0.50	0.624
	Tourists	3.61	0.56		
Overall support for CE and AGFEC practices	Gen Z	3.41	0.49	F = 4.11	0.008*
	Gen Y	3.71	0.54		
	Gen X	4.00	0.58		
	Baby boomers	4.33	0.61		

Note: *p < .01

Discussions

Readiness of local restaurants to adopt CE and AGFEC

The field study shows that restaurants in Chanthaburi Province exhibit varying but generally positive levels of readiness in adopting the principles of CE and AGFEC. Overall, the findings indicate increasing awareness among restaurant operators regarding waste reduction, local sourcing, and environmentally responsible practices. At the same time, the observed patterns of implementation remain uneven across operational domains.

1) *Policy and organizational practices* — Many restaurants have introduced internal practices aligned with CE principles, particularly in relation to waste management, recycling, and energy conservation. Employees are commonly encouraged to participate in food waste separation and packaging recycling, reflecting an early stage of organizational engagement with sustainable business practices. Similar patterns have been observed among SMEs in Thailand, where waste minimization is increasingly incorporated into daily operations, often without formalized monitoring or reporting systems (Phanthanawibool & Thavorn, 2023). Previous studies have also noted that CE-related practices in SMEs frequently rely on managerial commitment and staff participation rather than on standardized policy frameworks (Rizos et al., 2016).

2) *Raw material sourcing* — The findings indicate that most restaurants source seafood ingredients (such as shrimp, crab, clams, and fish) from local markets or intermediaries who procure products from small-scale fishers. This sourcing structure reflects strong local resource availability while also highlighting reliance on intermediary supply networks. Seasonal variations were reported to affect both prices and quantities of raw materials, which may influence procurement consistency. Existing studies suggest that closer linkages between producers and restaurants can enhance traceability and resource efficiency within gastronomy

supply chains (Tagong & Apichayakul, 2023). In addition, the Gálvez Nogales et al. (2023) emphasizes that short food supply chains contribute to the resilience of local food systems and support community-based tourism.

3) *Zero Waste and sustainable food initiatives* — Several restaurants have adopted basic waste reduction practices by separating organic waste and donating food scraps to nearby farmers for use as animal feed. However, systematic reuse of such by-products within restaurant supply chains remains limited. An illustrative example is a restaurant in Mueang District that feeds food scraps to egg-laying chickens and later uses the eggs as cooking ingredients. This practice represents a localized form of circular food management at the operational level. Comparable observations have been reported in studies of Thai community enterprises implementing small-scale circular food loops (Kerdpitak, 2024).

4) *Cultural and culinary identity* — Cultural authenticity is maintained through the continued preparation of signature local dishes, particularly Moo Chamuang, which incorporates indigenous herbs and regional biodiversity. These dishes reflect the integration of AGFEC principles by emphasizing authenticity, local ingredients, and cultural food narratives. International frameworks, such as UNESCO's Creative Cities of Gastronomy initiative, identify culinary heritage and food storytelling as important indicators of gastronomy-related readiness (UNESCO, 2021). Empirical studies also suggest that the use of indigenous ingredients can strengthen cultural branding and enhance competitiveness in regional gastronomy tourism (Yodkham et al., 2025).

5) *Packaging and waste management* — Most restaurants demonstrate readiness in packaging and material management through waste sorting and the recycling of bottles, condiment containers, and other reusable materials. Transport containers, including water tanks and ice boxes, are commonly reused in seafood delivery systems, contributing to the reduction of single-use packaging. Nevertheless, some restaurants show limited engagement in this area due to economic constraints and consumer preferences that prioritize taste and freshness over environmental considerations. Similar constraints have been reported in coastal food businesses, where financial pressure and low consumer awareness influence the adoption of CE practices (Chindaprasert & Wiwattanakornwong, 2024).

In summary, the readiness of local restaurants in Chanthaburi Province to adopt CE and AGFEC principles can be characterized as emergent but uneven across operational domains. While waste reduction, local sourcing, and cultural food practices are commonly observed, broader integration of circular approaches remains limited. These findings provide a descriptive baseline for understanding current readiness patterns, which informs the subsequent analysis of how readiness translates into practice in the following section.

Circular practices and operational limitations in gastronomy SMEs

The findings indicate that the adoption of CE practices among local gastronomy SMEs in Chanthaburi Province is primarily reflected through routine operational activities, particularly waste reduction, material reuse, and localized resource circulation. Most participating restaurants demonstrated readiness in implementing practical CE-related activities such as food waste separation, recycling of packaging materials, reuse of transport containers, and cooperation with nearby farmers for the utilization of food scraps as animal feed. These findings suggest that circular practices in local restaurant businesses are currently implemented through pragmatic and operationally manageable approaches rather than through comprehensive systemic transformation.

Importantly, the observed CE practices remain concentrated at the operational or "end-of-pipe" level, especially in food waste management and recycling activities. More advanced circular strategies, such as circular menu design, by-product valorization, closed-loop ingredient systems, or integrated supply-chain resource circulation, were only partially observed in the prototype restaurants. Similar implementation patterns have been identified in previous studies on SMEs and hospitality businesses, where circular economy adoption tends to prioritize low-cost and low-risk practices that can be integrated into existing operational routines (Rizos et al., 2016; Filimonau & De Coteau, 2019).

The prototype restaurants demonstrated several examples of localized circular food practices. For instance, food scraps and vegetable waste were reused

as animal feed, while reusable containers and recyclable materials were systematically managed within restaurant operations. One prototype restaurant further planned to establish its own layer chicken farm, creating a small-scale circular food loop in which food scraps would be reused as feed and eggs would subsequently be circulated back into restaurant operations as cooking ingredients. This finding reflects an emerging form of localized circular gastronomy system that connects waste management with food production and resource utilization. Comparable practices have also been reported in community-based food enterprises and sustainable gastronomy initiatives in Thailand (Kerdpitak, 2024).

However, despite relatively high readiness scores, the findings reveal important operational limitations that constrain broader CE adoption in gastronomy SMEs. In particular, menu development and culinary innovation remain strongly influenced by customer expectations and perceived market risks. Most restaurants continue to rely on relatively fixed menu structures and standardized flavor profiles in order to maintain customer familiarity and market acceptance. Restaurant owners reported concerns that introducing fusion food, experimental menus, or alternative healthy food concepts could negatively affect customer satisfaction, repeat visitation, and revenue stability.

This finding suggests that the readiness–adoption gap observed in the study is not primarily caused by a lack of environmental awareness or organizational capability, but rather by pragmatic business considerations associated with consumer preferences and market uncertainty. In gastronomy tourism contexts, restaurants may intentionally avoid culinary experimentation in order to preserve familiarity, authenticity, and customer trust. Similar observations have been reported in tourism and hospitality studies, which indicate that SMEs often balance sustainability implementation against economic risk and customer expectations (Rizos et al., 2016; Camilleri, 2019).

The comparatively lower consumer agreement regarding fusion food menus in this study further supports this interpretation. Consumers appeared to value traditional local food identity and culturally familiar dining experiences more strongly than innovative or hybrid culinary formats. This reflects a broader tension between authenticity and innovation in gastronomy tourism, where tourists may seek culturally embedded food experiences rather than experimental reinterpretations of local cuisine (UNESCO, 2021; Ellis et al., 2018).

Taken together, the findings suggest that circular economy transitions in gastronomy SMEs remain incremental and operationally selective. While restaurants demonstrate substantial readiness in practical waste reduction and local sourcing activities, broader transformation toward integrated circular gastronomy systems requires support mechanisms that reduce perceived business risks, strengthen consumer awareness, and encourage market acceptance of sustainability-oriented culinary innovation.

Local food identity and gastronomy tourism value creation

The findings demonstrate that local food identity plays a central role in connecting gastronomy tourism, cultural heritage, and circular economy practices within the food system of Chanthaburi Province. The province possesses strong readiness and potential in terms of local raw materials, culinary culture, and supply chain connectivity, all of which contribute to the development of sustainable gastronomy tourism.

One of the most significant findings is the extensive use of locally sourced ingredients throughout restaurant operations. Most participating restaurants obtained seafood products, vegetables, herbs, and condiments from local fishers, markets, intermediaries, and nearby producers. This localized sourcing structure supports short food supply chains and strengthens linkages between producers, restaurants, and tourism-related businesses. Previous studies have suggested that short supply chains can improve food traceability, enhance local economic circulation, and contribute to the resilience of community-based tourism systems (Gálvez Nogales et al., 2023; Tagong & Apichayakul, 2023).

The findings also indicate that local gastronomy in Chanthaburi is deeply embedded within regional cultural identity. Signature dishes such as Moo Chamuang reflect the integration of indigenous ingredients, local ecological knowledge, and cultural food heritage. Rather than functioning solely as symbolic representations of culture, these dishes operate as practical mechanisms through which environmental

resources, culinary traditions, and tourism experiences are interconnected. This observation supports previous research emphasizing that gastronomy tourism is closely linked to place identity, authenticity, and cultural storytelling (Ellis et al., 2018; UNESCO, 2021).

Consumer perceptions observed in this study further reinforce the importance of cultural food narratives in gastronomy tourism. Respondents demonstrated particularly positive attitudes toward local food menus associated with stories and food culture traditions, suggesting that culinary storytelling contributes to emotional engagement, memorable tourism experiences, and revisit intention. Existing literature similarly highlights that food storytelling and authenticity are important components of destination attractiveness and experiential tourism value creation (Richards, 2021).

In addition, the findings reveal the emergence of an interconnected local food system linking upstream producers, middlemen, fresh markets, restaurants, and tourism activities. The presence of seafood landing sites, local markets, community suppliers, and gastronomy tourism routes demonstrates early-stage integration within the regional gastronomy cluster. Government-supported fisheries projects and community resource management initiatives further contribute to food security and long-term resource availability in the area. These interactions reflect the characteristics of a localized gastronomy ecosystem in which production, distribution, consumption, and tourism are mutually connected through regional food networks (Gálvez Nogales et al., 2023; UNESCO, 2021).

Nevertheless, the study also identified several structural limitations within the local gastronomy system. Supply chain coordination remains relatively informal, and small-scale producers continue to face constraints related to logistics, processing standards, and market access. Furthermore, while restaurants commonly practice basic waste reduction activities, more advanced circular integration across the supply chain remains limited. Food by-products and surplus resources are not yet systematically valorized within broader regional food networks. Similar limitations have been observed in developing gastronomy destinations where sustainability initiatives remain fragmented and dependent on localized collaboration mechanisms (Filimonau & De Coteau, 2019).

Overall, the findings suggest that local food identity in Chanthaburi functions not only as a tourism branding mechanism, but also as a foundational component of an emerging circular gastronomy system. The integration of local ingredients, cultural narratives, and regional supply chains creates opportunities for sustainable gastronomy tourism development while simultaneously strengthening community-based economic and cultural resilience.

Consumer perceptions toward CE and AGFEC implementation

Overall support for sustainable gastronomy practices

The findings indicate that consumers generally demonstrated positive attitudes toward the implementation of CE and AGFEC practices in local restaurant businesses, with an overall mean score of 3. 62. This suggests that consumers increasingly recognize the importance of sustainability-oriented practices in gastronomy tourism and restaurant operations. In particular, respondents expressed positive perceptions toward restaurants that promote circular economy policies, reduce food waste, and support environmentally responsible practices.

The demographic characteristics of the respondents may partially explain these findings. Most respondents were domestic tourists and members of Generation Z, a consumer group frequently associated with higher environmental awareness, ethical consumption behavior, and stronger support for sustainability-related initiatives. Previous studies have shown that younger consumers are more likely to support environmentally responsible tourism businesses and sustainable consumption practices, particularly within food and hospitality contexts (Chrysochou, 2017; Camilleri, 2019).

The findings also reflect broader trends in sustainable tourism and ethical gastronomy consumption, where tourists increasingly seek tourism experiences that align with environmental values, local identity, and social responsibility. Similar patterns have been observed in gastronomy tourism studies suggesting that sustainability-oriented food experiences can positively influence destination image, tourist satisfaction, and behavioral intention (Ellis et al., 2018; Richards, 2021).

Cultural storytelling and local food authenticity

Among all survey items, the highest level of agreement was associated with local food menus connected to stories and food culture narratives. Consumers indicated that local dishes with cultural stories increased their interest, encouraged sharing experiences, and motivated revisit intention. This finding highlights the important role of storytelling and cultural authenticity in gastronomy tourism experiences.

The results support previous literature emphasizing that gastronomy tourism extends beyond food consumption and functions as a form of cultural experience embedded within local identity and heritage (UNESCO, 2021). In this context, food storytelling contributes to emotional engagement and enhances tourists' perceptions of authenticity and place attachment. Signature local dishes such as Moo Chamuang represent not only culinary products but also cultural narratives that connect tourists with local traditions, ecological knowledge, and regional identity.

Previous studies have similarly suggested that authentic local food experiences strengthen destination attractiveness and contribute to memorable tourism experiences (Ellis et al., 2018; Richards, 2021). Therefore, the findings imply that cultural storytelling and local culinary identity may function as strategic mechanisms for enhancing the competitiveness of gastronomy tourism destinations while simultaneously supporting the preservation of local food heritage.

Consumer support for zero-waste and circular food practices

Consumers also demonstrated positive attitudes toward visible circular economy practices implemented by restaurants, particularly food waste recycling and refillable beverage systems. Respondents showed relatively high levels of agreement regarding restaurants that separate food waste, cooperate with farmers to implement zero-waste practices, and provide refillable water or beverage containers to reduce plastic waste.

These findings suggest that consumers increasingly value observable sustainability practices within restaurant operations. In particular, visible waste reduction measures may strengthen perceptions of social responsibility and environmental commitment among gastronomy businesses. Similar observations have been reported in hospitality and tourism studies, where environmentally responsible operational practices positively influence customer trust, satisfaction, and restaurant support (Filimonau & De Coteau, 2019).

The findings also indicate growing public awareness of circular food management and resource efficiency in the tourism sector. Consumers appear to perceive practices such as food waste reuse, recycling, and refill systems as meaningful sustainability actions that contribute to environmental protection and responsible tourism development. This aligns with the broader transition toward sustainable gastronomy and circular tourism systems promoted by international organizations and sustainable tourism frameworks (Gálvez Nogales et al., 2023; UNESCO, 2021).

Authenticity versus innovation in gastronomy tourism

Although consumers generally supported sustainable gastronomy practices, comparatively lower levels of agreement were observed regarding fusion food menus that combine local ingredients with innovative culinary formats. This finding suggests that consumers in gastronomy tourism contexts may place greater value on authenticity and traditional culinary identity than on experimental or hybrid food concepts.

The findings correspond with observations from restaurant operators regarding relatively fixed menu structures and standardized flavor profiles, reflecting forms of operational rigidity in menu development and customer taste expectations. Restaurants intentionally maintained familiar menus and flavor profiles in response to customer expectations and perceived market risks. From the demand-side perspective, consumers may associate local gastronomy tourism with culturally authentic dining experiences rather than culinary novelty. As a result, restaurants may be reluctant to introduce innovative menu concepts that could potentially weaken perceptions of authenticity or reduce customer satisfaction.

Previous studies on gastronomy tourism similarly emphasize that authenticity, familiarity, and cultural embeddedness are important determinants of tourist food experiences (Ellis et al., 2018; Richards, 2021). Therefore, the findings suggest that the transition toward more innovative circular gastronomy models must carefully balance sustainability goals with consumer

expectations regarding local food identity and traditional culinary experiences.

The attitude- behavior gap in sustainable consumption

Despite generally favorable attitudes toward sustainable restaurant practices, the lowest level of agreement was associated with consumers' willingness to pay additional service fees for environmentally friendly packaging alternatives such as biodegradable cups or sugarcane straws. This finding highlights the existence of an attitude–behavior gap in sustainable consumption behavior.

Although consumers conceptually support environmental sustainability and circular economy initiatives, their willingness to bear additional personal costs appears to remain limited. Similar patterns have frequently been identified in green consumption studies, where positive environmental attitudes do not always translate into direct purchasing behavior or willingness to pay premium prices for sustainable products and services (Chrysochou, 2017; Camilleri, 2019).

This finding suggests that sustainability-oriented restaurant practices may receive stronger consumer acceptance when they are integrated into normal business operations without imposing significant additional costs on customers. In practical terms, consumers appear to support sustainability initiatives that are convenient, visible, and socially beneficial, but may become more hesitant when sustainability measures involve direct financial sacrifice. Consequently, policy support mechanisms, financial incentives, or green certification schemes may be necessary to reduce the economic burden on SMEs and encourage broader implementation of environmentally friendly restaurant practices without transferring excessive costs to consumers.

Policy guidelines for fostering the transition toward cultural and gastronomy tourism within a circular economy context

Based on field studies and stakeholder participation, it was found that the development of local tourism requires a systematic foundation encompassing several dimensions, including infrastructure development, support for entrepreneurs to adapt to circular tourism standards, capacity building and knowledge enhancement among local communities, as well as the expansion of marketing opportunities and promotional strategies that link local food identities with sustainable tourism experiences.

To address these challenges, five key policy recommendations were proposed (Table 5): (1) Establishing systemic infrastructure (such as local food and cultural learning centers, and developing circular raw material markets), (2) Supporting sustainable gastronomy tourism enterprises through tax incentives and certification standards, (3) Enhancing local capacities and skills to enable community members to become storytellers of food and culture while integrating waste management practices, (4) Promoting marketing and communication initiatives, including zero-waste food routes and Low Waste and Carbon Neutral food festivals, and (5) Developing monitoring and evaluation mechanisms to ensure policy continuity and long-term effectiveness.

Chanthaburi's potential as a Creative City of Gastronomy

Based on the key components of a Creative City of Gastronomy as defined by UNESCO, together with Thailand's national projects and policies for promoting creative food cities, the research team analyzed the potential of Chanthaburi Province for developing into a Creative City of Gastronomy. The strengths and weaknesses identified are summarized in Table 6. The findings indicate that the area demonstrates strong readiness in terms of culinary culture, availability of local raw materials, and a well-integrated gastronomy tourism network factors that serve as major strengths for development. Conversely, certain gaps remain in areas such as policy support, education, innovation, public communication, and stakeholder collaboration, all of which require further development to achieve the standards of a UNESCO Creative City of Gastronomy.

In Thailand, the food and tourism sectors have become one of the main drivers of the creative economy. The Thai government launched the "Amazing Thailand Culinary City" project under the BCG Economy Model, aiming to elevate Thai cuisine and gastronomy tourism to the global stage (PR Newswire, 2023). Meanwhile, UNESCO has outlined criteria for cities or regions aspiring to become Creative Cities of Gastronomy, emphasizing components such as local ingredients,

culinary identity, community-based gastronomy, food networks, and sustainable development (UNESCO, 2025).

For Chanthaburi Province, previous studies have shown that its local food identity is already well-developed and recognized. For instance, the study "Adaption of Chanthaburi Local Food Identity in Tourism Context" highlighted that unique local ingredients such as cowa leaves (Bai Cha-Muang) and regional herbs play a significant role in traditional dishes, thereby strengthening the province's gastronomy tourism potential (Tagong & Apichayakul, 2023) . Similarly, the study "Local Food Identity and Sustainable Commercial Production: Food Business Entrepreneurs in Chanthaburi Province" revealed that local food entrepreneurs rely on indigenous ingredients for commercial production and proposed guidelines to align the local food industry with the BCG model (Yodkham et al., 2025).

Table 5 Policy recommendations

No.	Policy theme	Proposals / Strategic actions
1	Establishing systemic infrastructure	1.1 Develop the strategic framework "Chanthaburi: Creative City of Gastronomy" in collaboration with the Tourism Authority of Thailand (TAT), Designated Areas for Sustainable Tourism Administration (DASTA), local municipalities, and research institutions. 1.2 Establish "Local Food and Cultural Learning Centers" in pilot areas to promote food culture, community lifestyles, and Zero-Waste practices. 1.3 Support the creation of "Circular Raw Material Markets" utilizing local surplus or by-products to produce new food items (e.g., fermented fruit peels, beverages from downgraded produce). 1.4 Develop prototype Green & Creative Restaurants that integrate circular and creative economy principles.
2	Supporting sustainable gastronomy tourism enterprises	2.1 Provide tax incentives (e.g., tax reductions), green restaurant certification, marketing benefits, or financial grants for entrepreneurs who adapt their operations to Circular Tourism standards, such as refillable packaging and sustainable waste management. 2.2 Develop a certification standard "Gastronomic Tourism Circular Certified" for restaurants, homestays, and local guides. 2.3 Build and expand the Local Food System Network to enhance raw material value, reduce food loss, and strengthen linkages between producers, restaurants, and tourism.
3	Enhancing local human capacity and skills	3.1 Design a Food Guide Training Program emphasizing local ingredients, culinary history, and food waste management. 3.2 Promote experiential learning through workshops, such as traditional food preservation and zero-waste cooking.
4	Promoting markets and communication	4.1 Develop gastronomy and circular economy tourism routes in collaboration with TAT, such as zero-waste food trails. 4.2 Organize Low-Waste and Carbon-Neutral Food Festivals to raise awareness and expand sustainable tourism markets.
5	Monitoring and evaluation	5.1 Establish key performance indicators (KPIs), such as reduced food waste volume, increased community income, and the number of businesses adopting circular economy practices. 5.2 Develop a centralized dashboard system for tracking and visualizing sustainable gastronomy tourism data.

From these findings, Chanthaburi demonstrates several key strengths in progressing toward becoming a Creative City of Gastronomy: (1) A distinctive and well-established local food identity ready for further development, (2) Rich diversity of local agricultural and fishery- based ingredients, and (3) An emerging gastronomy tourism network and supply chain with increasing integration.

However, certain gaps remain that must be addressed to meet UNESCO's criteria and align with Thailand's national policy direction, including: (1) The need for clear policies and governance structures to support stakeholder collaboration, (2) Capacity building and innovation in both food products and culinary services, (3) Enhanced national and international visibility through communication and promotion strategies, and (4) Stronger multi- sector partnerships among government, private, and community actors to ensure sustainability.

Considering national policy trends, such as the Amazing Thailand Culinary City project that promotes culinary experiences and gastronomy tourism (PR Newswire, 2023) , and successful case studies like Phetchaburi Province, which was designated a UNESCO Creative City of Gastronomy in 2021 (Thonghathai.org, 2025), Chanthaburi possesses strong potential to follow a similar trajectory.

Therefore, it is proposed that Chanthaburi establish a Chanthaburi Creative Culinary City Strategy, developed collaboratively with government agencies, local authorities, and research institutions. The province should also promote Geographical Indication (GI) registration, enhance product design and packaging for international markets, and develop unique gastronomy tourism routes such as Fruits of the Waterways and Seafood & Salt Culture. Additionally, community-based knowledge initiatives, such as local chef schools and cultural culinary training along with national and international recognition efforts (e.g., collaboration with the Michelin Guide) could further strengthen its long-term competitiveness.

In summary, Chanthaburi possesses a solid and multifaceted foundation for developing into a Creative City of Gastronomy. However, achieving this status will require systematic planning, cross-sectoral collaboration, and innovation-driven development to ensure sustainable transformation across cultural, social, economic, and environmental dimensions.

Conclusion

This study aimed to assess the readiness and impacts of adopting AGFEC and CE concepts among restaurants in Chanthaburi Province, and propose policy recommendations to transition toward gastronomy tourism under a circular and creative economy framework. The findings revealed that most participating restaurants demonstrated a high level of readiness for CE adoption, scoring between 80-95 out of 100. Key strengths included the use of local ingredients, systematic waste and packaging management, and a clear orientation toward sustainability practices. However, limitations remained in the development of creative or seasonal menus, communication of sustainability values to consumers, and insufficient economic incentives. These findings suggest that while restaurants possess foundational capacity, further support in knowledge, innovation, and consumer awareness is crucial to accelerate the transition toward a circular gastronomy model.

In- depth assessments of two model restaurants confirmed tangible practices reflecting CE and AGFEC principles such as local sourcing, waste segregation and reuse, food safety certification (Clean Food Good Taste), and the promotion of local food identity through signature menus like Moo Chamuang. Both restaurants exhibited community engagement and circular food management systems that could serve as local exemplars for sustainable gastronomy development. Furthermore, the area's food system mapping revealed a well- connected supply chain linking fishers, middlemen, local markets, restaurants, and consumers, supported by governmental infrastructure and policy mechanisms ensuring food resource sustainability.

Consumer perception analysis indicated a generally positive attitude toward CE and AGFEC-based dining experiences, with the highest support for refillable beverage services, storytelling in local dishes, and zero- waste menus. Nevertheless, consumers showed lower willingness to pay additional costs for eco- packaging or fusion- style menus, highlighting the need for incentive mechanisms and awareness- building campaigns to shape sustainable consumption behavior.

Integrating these results, Chanthaburi demonstrates strong potential to evolve into a Creative City of Gastronomy, given its rich culinary heritage, robust food supply network, and active tourism ecosystem. However, gaps remain in innovation, education, communication, and inter- sectoral collaboration that require strategic policy attention.

Accordingly, this study proposes five key policy directions: (1) Establish systemic infrastructure through a "Chanthaburi Creative Food City" strategy and a Local Gastronomy Learning Center; (2) Provide economic and certification incentives for sustainable food businesses; (3) Develop local human capital for food storytelling and waste management; (4) Promote sustainable gastronomy tourism through low-waste food routes and carbon- neutral events; and (5) Implement continuous monitoring using quantitative indicators for economic, social, and environmental performance.

In conclusion, integrating the concepts of creative and circular economies into gastronomy tourism not only addresses current challenges in the tourism sector but also serves as a transformative pathway for local economic resilience, cultural preservation, and sustainable development in Chanthaburi Province.

Table 6 Chanthaburi's strengths and weaknesses in developing into a creative city of gastronomy

Strengths / Key potentials		**Weaknesses / Areas for further development**	
Components	**Details**	**Components**	**Details**
1. Local food culture	A rich variety of traditional dishes such as Kuaitiao Kang (mantis shrimp noodle), Khao Kluk Prik Kluea (rice with salt and chili), Kaeng Moo Chamuang (Eastern Thai Braised Pork with cowa leaves), and Khanom Khai Pla (local dessert).	1. Integrated local policy	There is no clear provincial strategic plan or roadmap specifically for developing Chanthaburi as a Creative City of Gastronomy.
2. Local ingredients and agriculture	Fruits: such as mangosteen, durian, rambutan, and longkong. For local condiments, such as shrimp paste, lemongrass, sea salt chili paste) and abundant fresh seafood.	2. Education and knowledge transmission system	Lack of structured local food education in schools or sustainable training programs for culinary heritage preservation.
3. Food entrepreneurs	Numerous local food producers, cultural restaurants, and community enterprises contributing to local food identity.	3. Knowledge management and innovation	Limited promotion of culinary innovation or creative upgrading such as chef's table experiences, fusion food, or contemporary packaging.
4. Tourism linkage	Well-established gastronomy tourism routes such as Crab Feast and Eagle Watch, Fruit Tasting by the Beach, and food-based community tourism (e.g., Unseen Sweets village at Ban Mai).	4. International promotion	Despite high potential, Chanthaburi's international recognition as a "food city" remains limited compared to Phuket or Phetchaburi.
		5. Network collaboration	Stronger systematic collaboration among government agencies, private sectors, researchers, local chefs, and communities is needed.

Limitations and future research

This study has several limitations that should be acknowledged. First, the study employed an exploratory research design with a relatively small number of participating restaurants and a non-probability sampling approach for the consumer survey. Therefore, the findings may not be fully generalizable to all gastronomy tourism destinations or restaurant businesses in Thailand.

Second, the restaurant readiness assessment framework was developed primarily as an exploratory operational tool based on concepts related to circular economy and sustainable gastronomy. Although the consumer questionnaire was tested for reliability using Cronbach's alpha, the restaurant readiness assessment itself has not yet undergone full-scale statistical validation. Therefore, future studies should further develop and validate standardized measurement instruments for assessing circular gastronomy readiness in tourism businesses.

Third, this study focused specifically on Chanthaburi Province as a case study area with strong seafood and local gastronomy characteristics. Different tourism destinations may demonstrate different patterns of circular economy adoption, consumer perceptions, and supply chain structures.

Future research should expand comparative studies to other gastronomy tourism destinations in Thailand and Southeast Asia, employ larger and more representative samples, and apply more advanced statistical techniques such as factor analysis or structural equation modeling to examine the relationships among sustainability attitudes, consumer behavior, and circular gastronomy practices. In addition, longitudinal studies could help evaluate the long-term impacts of circular economy implementation on local tourism development, community resilience, and sustainable food systems.

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Declaration of generative AI in scientific writing

The authors declare that the generative AI tools were used to improve the readability and language of this manuscript. The authors reviewed and supervised the use of these tools and remain fully accountable for the content of the manuscript.

CRediT author statement

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