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Theorizing the socio-cultural dynamics of consumer decision-making for participation in community-supported agriculture

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Abstract

In the context of the urgent need to establish sustainable food systems, community-supported agriculture (CSA), in which consumers share risks with producers, has gained increasing attention. Understanding the factors that influence consumer participation in CSA is crucial, yet the complete picture and interrelations of these factors remain unclear in existing studies. This research adopts a scoping review and the KJ method to elucidate the factors influencing consumer participation in CSA and to theorize consumer participation. In particular, we focus on the dynamics of individual decision-making for participation, under the premise that individuals are embedded in socio-cultural environments. We examine the decision-making process based on the seesaw of expected gains and losses from participation, along with the reflexivity to the individual and the process of updating decision-making post-participation. Our study highlights how individual decision-making for participation is influenced by relationships with others within the embedded socio-cultural environment, as well as by attachment and connection to the community. It also shows that discrepancies between expectations and experiences post-participation, and the transformation of the social capital, promote the updating of decision-making processes. In addition, among the factors identified in this study for participation in CSA, the decision to participate was heavily influenced by expectations of "variety of ingredients," suggesting that other factors such as "food education and learning opportunities," "contribution to environmental and social issues," and "connections with people and nature" had little impact. Although there are limitations, the insights gained from this study offer profound implications for stakeholders and provide valuable insights for more sustainable and efficient CSA practices.

Keywords: Community-supported agriculture, KJ method, Scoping review, Consumer participation, Social capital

Introduction

There is growing interest in creating sustainable food systems as a response to environmental issues associated with the industrialization and globalization of food markets. This recent push for sustainable food systems has highlighted the importance of developing short-food supply chains (SFSCs). It emphasizes strengthening the direct

connections between producers and consumers and promoting the consumption of locally produced food (Princen 1997; Galli and Brunori 2013; Clapp 2015; Weber et al. 2020). Community-supported agriculture (CSA) has emerged as an important development in this movement (Woods et al. 2017; Vasquez et al. 2017). CSA represents a paradigm shift in the traditional farm-to-consumer sales model, in which consumers, often referred to as "members" or "shareholders," commit to supporting a farm operation by purchasing a share of the anticipated harvest in advance.

This innovative arrangement provides farmers with much-needed up-front capital and a guaranteed market for their produce, while consumers benefit from receiving fresh, locally produced food and the opportunity to become directly involved in the production process. CSA presents a practical solution to the economic barriers faced by small farmers by providing financial stability through prepaid memberships. This stability empowers farmers to focus more on adopting and enhancing sustainable farming techniques (Worden 2004).

CSA differs from other SFSCs such as farmers' markets not only through transactions involving the purchase of locally produced food but also by facilitating the exchange of intangible values such as interaction between producers and consumers, and opportunities to learn about agriculture, food, and the production and supply processes (Blättel-Mink et al. 2017; Egli et al. 2023). In addition, consumer involvement in CSA goes beyond basic farm tasks such as volunteering to grow or pack produce. Through appropriate engagement, consumers can participate in farm management and help reduce the burden on farmers. Thus, the value offered by CSA is diverse compared to other SFSCs, and understanding which aspects of this value attract consumer participation is crucial for the sustainable operation of CSA.

Many studies revealed that consumers participate in CSA because of environmental concerns, support for local farmers, access to quality food, support for the local economy, desire to eat seasonally, and access to information about the harvest (Pole and Gray 2013; Brehm and Eisenhauer 2008; Vassalos et al. 2017; Vasquez et al. 2017; Kondo 2021; Chen et al. 2019; Cone and Myhre 2000; Cox et al. 2008; Farmer et al. 2014). A choice experiment with consumers revealed that consumers who participate in farmers' markets are more positive about participating in CSA and are willing to share the risk of prepayment with farmers (Pisarn et al. 2020). On the other hand, these studies often focus on specific regions and contexts and may not adequately capture the complex decision-making of diverse consumers (Savarese et al. 2020; Vasquez et al. 2017).

By clarifying the overall picture of these factors, we can not only provide insights that inform the formulation of expansion strategies but also make it easier to adapt the model to the characteristics of the case and plan appropriate interventions. A variety of socioeconomic, psychological, and geographic attributes are thought to influence consumers' motivations and backgrounds for participating in CSA. A comprehensive understanding and systematic organization of these factors are expected to provide new insights that will contribute to the spread and development of CSA.

In this study, we aim to identify the factors that influence consumer participation in CSA by conducting a scoping review to comprehensively analyze previous research. We intend to illustrate and describe the relationships among these factors through the KJ method and theorize consumer participation in CSA.

Materials and methods

In this research, we conducted a scoping review to identify the elements that sway consumer engagement in CSA and to understand how these elements interact. Utilizing the KJ method, factors were extracted from the reviewed literature using open coding, and a theory of consumer participation was developed by repeatedly illustrating and describing the relationships among the factors.

Data collection: scoping review

For the scoping review, Web of Science All Databases, including the Web of Science Core Collection, BIOSIS Citation Index, Current Contents Connect, Data Citation Index, Derwent Innovations Index, KCI—Korean Journal Database, MEDLINE, Russian Science Citation Index, SciELO Citation Index, and Zoological Record, were utilized. This review was conducted on June 9, 2023, following the PRISMA-ScR guidelines (Tricco et al. 2018). The search query used was TS = ("Community Supported Agriculture"). To ensure the rigor and validity of the scoping review, specific inclusion and exclusion criteria were established for selecting the papers to be analyzed. The inclusion and exclusion criteria used are shown in Table 1.

These inclusion and exclusion criteria were adhered to, and screening was conducted by two coders: the lead author and the last author. Subsequently, the lead author thoroughly read the title, abstract, and full text of each paper and conducted a full paper screening to ensure that the selected papers were relevant and contributed to the research objective of understanding the factors influencing consumer participation in CSA. In addition, to provide a more comprehensive scoping review, the papers cited by the selected articles were also screened. The same criteria shown in Table 1 were used for the screening inclusion and exclusion criteria during this process.

Data analysis: KJ method

In this study, after selecting papers through screening, open coding was used to extract factors from each paper that influenced consumers' participation, continuation, and withdrawal from CSA. These factors were then visualized in collaboration with co-authors. These procedures were based on the KJ method. The KJ method, which is designed to efficiently organize fragmentary information and ideas, is a tool for formulating and analyzing qualitative data. It also serves as a method for identifying essential problems and generating problem-solving ideas (Kawakita 1986; Scupin 1997). In this study, Miro, an online whiteboard application, was used for diagramming.

Table 1 Inclusion and exclusion criteria for scoping review

Inclusion criteria	Exclusion criteria
Full-text articles	Public report, only abstract
Articles published in the English language	Articles published in languages other than English
Studies discussing consumer participation factors or motivations	Studies with consumer interventions, such as cost offset CSA

The key feature of the KJ method is that it enables users to decontextualize text from the target data and then recontextualize it through a process of grouping and articulating sentences combined with visualization. Some case studies were included in the scoping review conducted for this study, and it is considered that specific socio-economic and geographical factors of the countries may influence the motivations and backgrounds of consumers participating in CSA. Therefore, through this decontextualization and recontextualization approach, it is possible to systematically organize individual pieces of information, clarify information on a broader scale, and discover new perspectives and relationships to construct inferences. The constructivist design of this method facilitates a deep understanding of complex information and promotes the construction of inferences that are firmly rooted in the context of the research area. The ability of the KJ method to provide practical and specific inferences useful in such practices is what made it suitable for this study.

The theorization of consumer participation through illustration and description in this study comprises four major steps as shown in Fig. 1: Step 1. Label making, Step 2. Label grouping, Step 3. Chart making, Step 4. Written explanation. In our study, the Step 1 and Step 4 processes were conducted by the lead author, while Steps 2 and 3 were collaboratively executed by the lead author and the last author. The iteration of Steps 2–4 was informed by validation and feedback from other co-authors, and the chart was modified as needed.

This process of illustrating and revising possesses characteristics akin to peer debriefing techniques (Janesick 2015). Peer debriefing is employed as a method to enhance the reliability and credibility of research, allowing for the fortification of theoretical robustness through collaborative deliberation and revision among researchers. In our study, this process ensured that the theory aptly reflected the data. Discrepancies in opinions were resolved through consensus. Consequently, the refined chart and explanation were adopted as the central theory of our research.

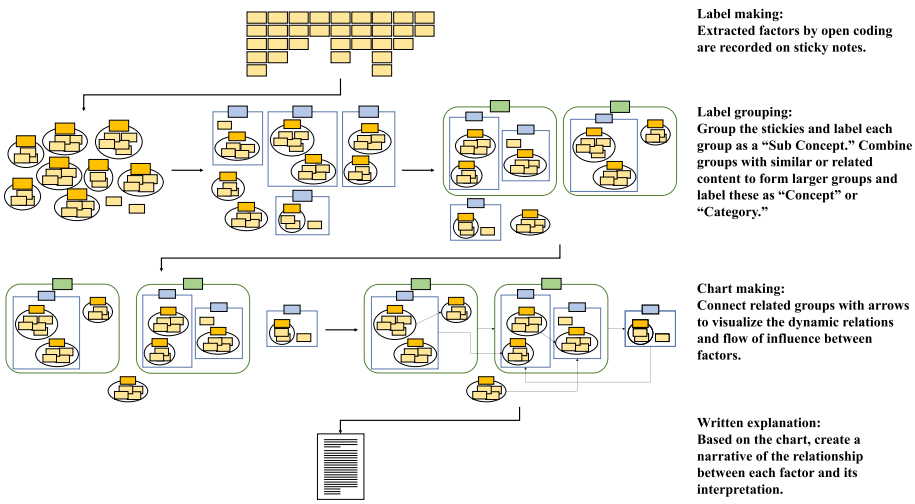

Fig. 1 Theorizing process using the KJ method

Researcher characteristics and reflexivity

The research team comprised six researchers with diverse backgrounds and expertise. The lead author, the principal investigator, has experience visiting small farms, volunteering, and interacting with producers. This experience, considering the nature of this study's focus on consumer participation in CSA, is noteworthy. In addition, the authors' thorough reading of the full texts of the articles selected through screening during the research process influenced their understanding of the context of CSA research. These characteristics may have influenced our approach to open coding and grouping in this study, potentially providing unique perspectives in the analysis of factors affecting consumer participation. The second author, who serves as a PR/marketing representative for a pork marketing company with a focus on sustainability, brings a unique perspective to this research. His extensive experience in reporting on producers' efforts toward sustainable production and regional contributions, and in disseminating information to consumers through websites and the media, has provided practical insights and had a profound impact on the data analysis and theoretical model of this study. The third author, as CMO of the same company, has experience in consumer-facing business, launching e-commerce sites, and product development, providing a broad understanding of both producers and consumers. In addition, his experience in initiating community spaces as a planner provides a comprehensive understanding of community formation and the participation process, which significantly influences the theoretical construction. The fourth author, actively involved in marketing, brings extensive experience in advocating social contributions through food to consumers, providing a broad understanding of consumer perspectives. In addition, his experience as a consumer using a farm-to-door vegetable service for 5 years provides a unique perspective on consumer participation in CSA, which greatly influences the theory construction. The fifth author, while not possessing extensive knowledge in the agricultural industry, holds a Ph.D. in Applied Linguistics. This unique knowledge considerably influenced the process of data collection and interpretation, especially the process of narrativization. The last author of this study possesses extensive experience in conducting scoping reviews across various fields, designing and managing workshops utilizing the KJ method, and a wealth of knowledge in data analysis using the KJ method. In addition, the last author's research on smart livestock technology, grounded in the iterative and reflexive approaches of human-centered design, significantly influenced the theorization of consumer participation in this study.

Following the constructivist paradigm, our diverse backgrounds and experiences influenced each stage of the research process, from factor extraction to theorizing consumer participation through recontextualization. Each researcher brought potential biases to the study. To mitigate these biases, we shared information among co-authors and clarified different perspectives on the data to achieve a balanced interpretation. In this process, the use of the KJ method for visualization and storytelling played a critical role in facilitating co-author understanding. Collaboration and discussion among co-authors with diverse backgrounds helped to prevent unique perspectives and biases from influencing the results and provided new insights for a deeper understanding of consumer participation in CSA.

Results

Literature selection process and target papers: a scoping review

Figure 2 shows the flowchart of the scoping review process according to the PRISMA-ScR guidelines. We initially identified 505 papers from an extensive search across the Web of Science All Databases. These papers underwent a detailed screening process based on specific inclusion and exclusion criteria, focusing on original research articles published in English-language open access journals. This screening narrowed the selection to 183 papers.

The lead and last authors then reviewed the titles and abstracts of these 183 papers, selecting those that aligned with the criteria detailed in Table 1. This process further refined the selection to 46 papers. Of the 46 papers, 6 were excluded, including 1 "Data in Brief," 1 irrelevant to CSA, and 4 unrelated to consumer participation factors.

Further, we extended our screening to include 69 unique papers cited in the 40 papers. This secondary screening, following the same criteria, led to the addition of 21 more papers, culminating in a total of 61 papers included in our study. This comprehensive process ensured a thorough and relevant collection of research for our analysis.

Figure 3 shows the year of publication and country of coverage for the 61 papers analyzed in the review. The total number of papers in the graph is 65, as some papers cover more than one country. The number of papers on factors contributing to consumer participation in CSA shows an increasing trend: of the 40 papers published before 2019, 29 were studies in the US, while the increase in studies in other countries after 2020 indicates that the entry of non-US researchers into the field is responsible for the increase in the number of papers. It also shows the increased interest in vulnerabilities and risks of the current food supply chain brought about by COVID-19, with 2 out of 11 papers in 2020, 3 out of 6 in 2021, and 4 out of 5 in 2022 mentioning COVID-19. This also suggests that the pandemic has increased interest in CSA and changed added a new focus for research.

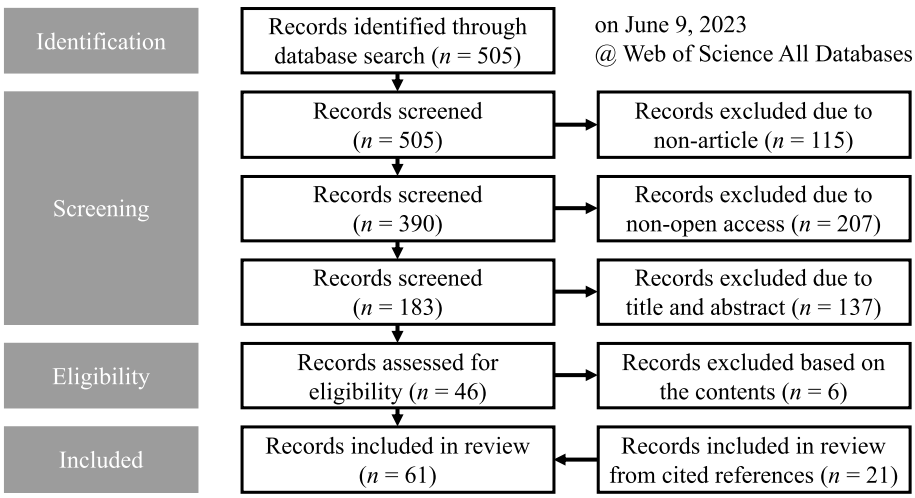

Fig. 2 PRISMA-ScR flowchart

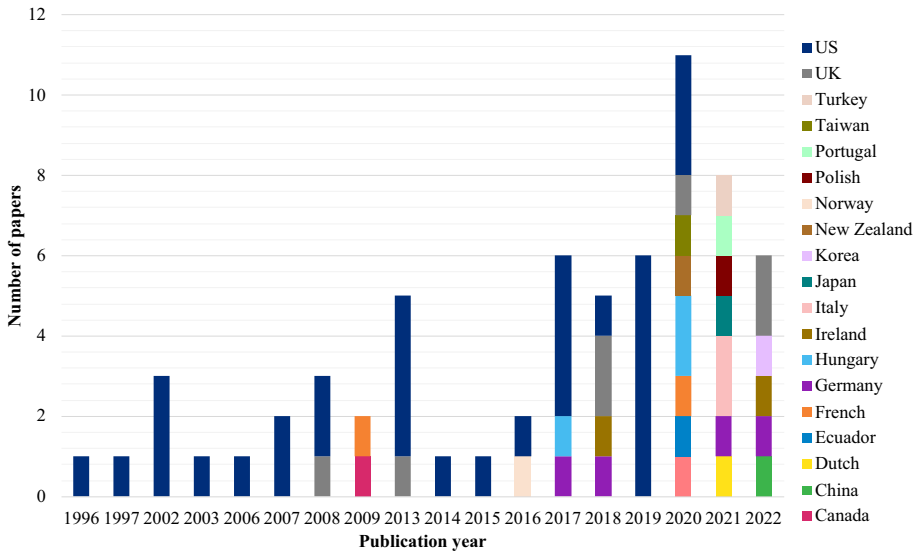

Fig. 3 Publication years and countries/regions studied over the years

Factors influencing consumer participation in CSA

To theorize consumer participation, we used the KJ method to illustrate and describe the data. First, we applied open coding to the 61 papers selected through screening, extracting 306 factors. These factors were recorded on sticky notes for further illustration and narrative development. This process identified 6 categories, 23 concepts, and 68 sub-concepts.

We then created a core category that summarized the extracted factors, categories, concepts, and sub-concepts. A correspondence table detailing all extracted factors along with their relationship to the core category, categories, concepts, and sub-concepts, including source information, is provided in the Online Appendix. In abstracting the factors that influence consumer participation, it became clear that they largely fall into two categories: "Socio-Cultural Environment" and "Seesaw of Gain and Loss."

The "Socio-Cultural Environment" illustrates that individuals are embedded in a socio-cultural context, such as networks of relationships with others, that shapes their attitudes and behaviors. These attitudes and behaviors are influenced at multiple levels, including the family/peer level, the local environment and community, and national agricultural framework conditions. The concept of the "Seesaw of Gain and Loss" refers to decision-making influenced by the balance between expected gains and losses from participation in CSA. This includes not only individual perceptions of gains and losses but also the acceptance of risks associated with CSA, such as financial and time commitments, which are also influenced by the socio-cultural environment. The specifics of each of these components are discussed in the following sections.

Socio-cultural environment

Tables 2, 3, 4 and 5 present the composition and explanation of the socio-cultural environment at each level. We categorized this into individual, family/peer, local

Table 2 Socio-cultural environment: individual

Core category	Description	References
Knowledge and experience	Knowledge and experience with CSA or similar direct marketing	Pisarn et al. (2020), Vassalos et al. (2017), Yu et al. (2019), Hanson et al. (2019), Morgan et al. (2018) and Diekmann et al. (2020)
Skills	The level of experience in cooking fresh food, the cooking environment, and the ability to handle unfamiliar ingredients	Hanson et al. (2019), O'Neill et al. (2022), Andreatta et al. (2008), Sitaker et al. (2020), Zepeda and Li (2006), Galt et al. (2019a), Lee (2022) and Rossi et al. 2017)
Attitude toward food	Attitude toward food, including particularities in obtaining ingredients, and the effort and time dedicated to food preparation	Cotter et al. (2017), Vasquez et al. (2016), Galt et al. (2019a, b), April-Lalonde et al. (2020), Schmutz et al. (2018), Pole and Kumar (2015), Schnell (2013), Farmer et al. (2014), Ostrom (2007), O'Hara and Stagl (2002), Farnsworth et al. (1996), Opitz et al. (2017), Kolodinsky and Pelch (1997), Hvitsand (2016), Durrenberger (2002), Chen et al. (2019), Cox et al. (2008), Yu et al. (2019), Diekmann et al. (2020), Bernard et al. (2020), Birtalan et al. (2020a, b), Brehm and Eisenhauer (2008), Vassalos et al. (2017), Sitaker et al. (2020), Wang et al. (2021), Morgan et al. (2018), Zoll et al. (2018), Gorman (2018), Perez et al. (2003), Bakos (2017), Zepeda and Li (2006)
Attitude toward environment	Attitude toward environmental issues and social issues at the national or regional level	Vassalos et al. (2017), Andreatta et al. (2008), Rossi et al. (2017), Kolodinsky and Pelch (1997), Schmutz et al. (2018), Schnell (2013), Ostrom (2007), Hvitsand (2016), Durrenberger (2002), Chen et al. (2019), Cox et al. (2008), Birtalan et al. (2020a), Zoll et al. (2018) and Boughrara et al. (2009)
Attitude toward health	Attitude toward healthy lifestyles and activities, including diet and exercise	Andreatta et al. (2008), Cox et al. (2008), Vassalos et al. (2017), O'Hara and Stagl (2002), Birtalan et al. (2020a), April-Lalonde et al. (2020) and Galt et al. (2017)

Table 3 Socio-cultural environment: family/peer

Core category	Description	References
Family/peer environment and value	Family/peer situations that require attention to health, or a shared household understanding of the need for health awareness and effort in food preparation	Zepeda and Li (2006), April-Lalonde et al. (2020), Kolodinsky and Pelch (1997), Birtalan et al. (2020b) and Galt et al. (2017)

environment and community, and national agricultural frameworks and defined core categories for each of these components.

Seesaw of gain and loss

Tables 6 and 7 detail the composition and explanation of the seesaw of gain and loss, focusing on expected gain and expected loss. Four types of gains and three types of losses were identified and extracted as core categories.

Table 4 Socio-cultural environment: local environment and community

Core category	Description	References
Connection and attachment to the community	The presence and degree of connection or sentiment toward the community	Vassalos et al. (2017), Sitaker et al. (2020), Pole and Kumar (2015), Pole and Gray (2013), Farmer et al. (2014), Ostrom (2007), Opitz et al. (2017), Kolodinsky and Pelch (1997), Hvitsand (2016), Chen et al. (2019), Brehm and Eisenhauer (2008), Gorman (2018), Perez et al. (2003), Bakos (2017), Galt et al. (2017), Kondo (2021) and Kato (2013)
Culture	The presence of traditional landscapes, farming practices, or crops in the region	Opitz et al. (2017), Gorman (2018) and Schnell (2013)
Local norms	The presence and degree of norms in the community regarding the support of farmers and the community	Morgan et al. (2018), Diekmann et al. (2020), Schnell (2013), O'Hara and Stagl (2002), Ostrom (2007), Farnsworth et al. (1996), Hvitsand (2016), Durrenberger (2002), Brehm and Eisenhauer (2008), Wang et al. (2021), Zoll et al. (2018, 2021), Perez et al. (2003), Galt et al. (2017), Thompson and Coskuner-Balli (2007), Ravenscroft et al. (2013) and Sharp et al. (2002)

Table 5 Socio-cultural environment: national agricultural framework conditions

Core category	Description	References
Trends and maturity of CSA	Popularity and maturity of CSA activities	Ostrom (2007), Farnsworth et al. (1996), Hvitsand (2016), Kondo (2021), Feagan and Henderson (2009), Bonfert (2022), Pelin and Murat (2021)
Support systems and organizations	The existence of efforts and organizations that provide subsidies and grants to promote CSA at national and regional levels	Yu et al. (2019) and Savarese et al. (2020)
Agriculture policy	Policy factors influencing CSA implementation	Mert-Cakal and Miele (2020), Plank et al. (2020), Durrenberger (2002), Yu et al. (2019) and Galt et al. (2019b)

Theory and narrative of consumer participation

Considering the two factors of "Socio-Cultural Environment" and "Seesaw of Gain and Loss," we created a theoretical diagram, as shown in Fig. 4. Below is the narrative description of the theoretical diagram. The core categories are indicated by [Core Category], and categories, concepts, and sub-concepts are underlined.

Consumer participation in CSA is significantly influenced by individual [Attitude toward Food], such as dedication to ingredient quality and the effort put into cooking. Additionally, [Attitude toward Health], formed through maintaining a healthy diet and physical activity, and [Attitude toward Environment] regarding the environment and social issues at the national and regional levels also play a crucial role.

Furthermore, an individual's [Skills] in preparing fresh produce and [Knowledge and Experience] in direct marketing, including CSA, also affect participation.

However, these factors necessitate a thorough consideration of the premise that individuals are embedded in a Socio-Cultural Environment. This environment comprises not only the Individual but also the Family/Peer, Local Environment and Community, and National Agricultural Framework Conditions.

Table 6 Seesaw of Gain and Loss: Gain

Core category	Description	References
Food education and learning opportunities	The presence and variety of learning opportunities regarding food ingredients and agriculture are provided by producers	Morgan et al. (2018), Andreatta et al. (2008), April-Lalonde et al. (2020), Opitz et al. (2017), Kolodinsky and Pelch (1997), Hvitsand (2016), Zoll et al. (2018), Feagan and Henderson (2009), Savarese et al. (2020) and Zepeda et al. (2013)
Contribution to environmental and social issues	Awareness regarding solving environmental issues and social problems at the national and regional levels through participation in CSA	Vassalos et al. (2017), Ostrom (2007), Farnsworth et al. (1996), Cox et al. (2008), Zoll et al. (2018, 2021) and Savarese et al. (2020)
Connections with people and nature	Meeting people through CSA participation and interacting with nature and animals through work on the farm	Galt et al. (2019a), Pole and Kumar (2015), Pole and Gray (2013), Schnell (2013), O'Hara and Stagl (2002), Hvitsand (2016), Cox et al. (2008), Brehm and Eisenhauer (2008), Wang et al. (2021), Zoll et al. (2018), Gorman (2018), Bonfert (2022), Mert-Cakal and Miele (2020), Zepeda et al. (2013), Furness et al. (2022) and Piccoli et al. (2021)
Variety of ingredients	The content of the share, including the amount and type of food ingredients, and the frequency of sharing	Pisarn et al. (2020), Yu et al. (2019), Hanson et al. (2019), Morgan et al. (2018), O'Neill et al. (2022), Andreatta et al. (2008), Sitaker et al. (2020), Galt et al. (2017, 2019a, b), Vasquez et al. (2016), Pole and Kumar (2015), Pole and Gray (2013), Schnell (2013), O'Hara and Stagl (2002), Ostrom (2007), Opitz et al. (2017), Kolodinsky and Pelch (1997), Durrenberger (2002), Bernard et al. (2020), Wang et al. (2021), Zoll et al. (2018), Gorman (2018), Perez et al. (2003), Boughrara et al. (2009), Thompson and Coskuner-Balli (2007), Sharp et al. (2002), Plank et al. (2020), Zepeda et al. (2013) and Sitaker et al. 2019)

Table 7 Seesaw of gain and loss: loss

Core category	Description	References
Complicated relationships	Constraints and obligations within the community due to CSA participation, as well as complications in communicating with members and farmers	Ravenscroft et al. (2013), Poças Ribeiro et al. (2021), Kondo (2021) and Medici et al. (2021)
Money	The costs associated with purchasing a share in the CSA and the difference in spending compared with previous food procurement costs	Yu et al. (2019), Andreatta et al. (2008), Sitaker et al. (2020), Cotter et al. (2017), O'Hara and Stagl (2002), Kolodinsky and Pelch (1997), Perez et al. (2003), Kato (2013), Plank et al. (2020) and McGuirt et al. (2020)
Time	The additional time required for picking up the shares and preparing unfamiliar ingredients or fresh produce	Perez et al. (2003), Sitaker et al. (2019, 2020), Morgan et al. (2018), Plank et al. (2020), Galt et al. (2019a), Bakos (2017) and Kato (2013)

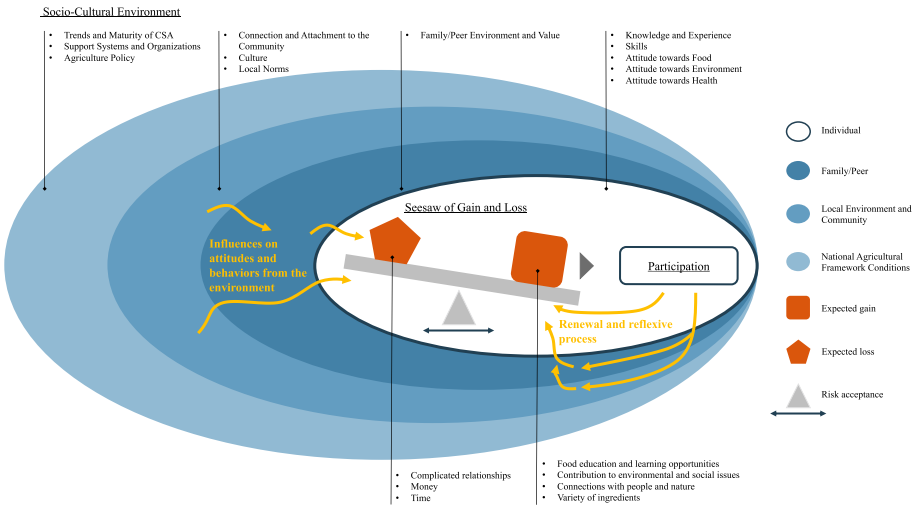

Fig. 4 CSA participation model: socio-cultural dynamics and embeddedness

At the Family/Peer level, the presence of family/peer members who require action to improve their health and a collective understanding within the family/peer group about health, categorized under [Family/Peer Environment and Value], are believed to influence an individual's attitudes and behaviors.

The family/peer group's engagement in leading a life with health considerations and their values toward food as a family/peer, when imparted to an individual, is thought to affect their [Attitude toward Health] and [Attitude toward Food]. This is because sharing meals within the same household and upholding values like health practices through food, including the ability to devote effort to food preparation, are interpreted as contributing to shaping an individual's attitudes and behaviors. Additionally, families/peer groups that can/do cook fresh food at home are also considered to affect the development of [Skills].

At the Local Environment and Community level, [Connection and Attachment to the Community] and [Local Norms] can shape the desire to consume local ingredients and enthusiasm for supporting farmers and the local area, which influence the individual's and family/peer group's [Attitudes toward Food] and [Attitudes toward Environment]. In addition, having experience participating in CSA or using farmers' markets and having connections with farmers is assumed to influence the frequency of participation or use, affecting the degree of [Knowledge and Experience]. In the presence of a community environment in which word of mouth spreads easily, or in which the region is involved in landscape preservation and environmental management and emphasizes the [Culture], information about CSA and values about the community and nature are more likely to be shared with individual and family/peer group. This not only develops values toward food as a family/peer but also the values fostered also influence the individual.

At the National Agricultural Framework Conditions level, there are macro-level factors related to consumers' access to CSA as a precondition, such as the existence of [Agriculture Policy] and [Support Systems and Organizations] that influence the implementation of CSA, and [Trends and Maturity of CSA] that affect awareness of CSA.

In such a socio-cultural environment, individual decision-making is based on the seesaw of gain and loss. When the balance between expected gain and expected loss tips toward expected gain, consumers participate in CSA. Expected gains include [Food Education and Learning Opportunities], [Variety of Ingredients], and [Connections with People and Nature], as well as [Contribution to Environmental and Social Issues] provided through CSA participation. Expected losses include [Complicated Relationships] associated with the expectation of human connections through CSA participation with consumers and producers. If there are many restrictions within the community, consumers may perceive human relationships as a loss. There is also a loss of [Money] and [Time], such as a lack of feeling the fairness in the content and price of the share and high accessibility to pick-up points.

The balance is influenced by individual perceptions and levels of risk acceptance. These levels of recognition of the benefits of taking risks and risk acceptance are in turn influenced by the socio-cultural environment.

Participation in CSA leads to influences from the values and norms within the CSA community, transforming an individual's [Knowledge and Experience], [Skills], and [Attitudes]. These transformations in turn affect the socio-cultural environment and the seesaw of gain and loss. Because the transformed socio-cultural environment and a seesaw of gain and loss once again influence individual decision-making, participation in CSA is a reflexive process. In addition, decisions are further influenced by the gap between expected gains and experienced losses from participation, such as financial and time cost performance, as well as new perceived gains and losses, and changes in risk acceptance based on these factors.

Thus, under the premise that consumers are embedded in a socio-cultural environment, they are influenced by that environment as well as by the reflexive and updating processes associated with individual actions that lead to decision-making and participation in CSA.

Discussion

Theoretical implication

Influence of socio-cultural environment on the individual

Our theoretical model posits that individuals are embedded in a socio-cultural environment and that this environment is divided into four levels: national agricultural framework conditions, local environment, community, and family/peer and individual. These influence the formation of individual attitudes and behaviors. In particular, the relationship between the family/peer group and the individual is closely intertwined, and the decision-making processes and values within the family/peer group strongly influence the individual. For example, family decision-making falls into three main categories: husband-dominant, wife-dominant, and joint decision-making by the couple (Jenkins 1978; Filiatrault and Ritchie 1980; Nichols and Snepenger 1988; Fodness 1992). Thus, considering this in a family/peer group, if the dominant party adopts information and values through word-of-mouth or connections within the local environment and community and shares them at home, or bases his or her decision to participate in CSA on this information, the attitudes and behaviors of the non-dominant individual may be somewhat coerced. Conversely, if the non-dominant party is involved in CSA and this

results in increased effort within the household, it is conceivable that the dominant party's decision could lead to the formation of a decision to withdraw from CSA.

This influence of the surrounding environment on the formation of an individual's attitudes and behaviors is also evident in the socio-ecological model. This model highlights how different levels of an individual's environment, from immediate family/peers to broader community and societal factors, play a crucial role in shaping their behaviors and attitudes (Dahlberg and Krug 2006). However, a point of difference between the socio-ecological model and our theory is the significant influence of community-level factors, such as the local environment and community, on the individual, in addition to direct relationships such as family/peer. This includes not only local farmers and people within the community but also the culture and natural values inherent to the region itself. Our study suggests that strong connections and attachments to such cultural and natural aspects of a region, represented as "Connection and Attachment to the Community" (Core category), play a role in forming the motivation to support the local community. This aligns with the concept that in "locations with natural surroundings," both place attachment and an individual's Environmental Identity (Clayton 2003) contribute to place-specific pro-environmental behaviors. This connection indicates that an individual's sense of belonging and identity related to the environment play a crucial role in fostering behaviors that are beneficial to that particular natural setting (Naiman et al. 2021; Tonge et al. 2015; Halpenny 2010).

As stated above, individuals are embedded in their socio-cultural environment, and within this environment, it is said that through connections with others, individuals sometimes rely on trust and intuitive judgments within their networks rather than on rationality (Granovetter 1985). Therefore, it can be assumed that when individuals establish strong relationships with their family/peer group or residents and farmers in the local environment and community, or when they have a strong attachment to their region, attitudes, and behaviors that prioritize the benefits of their family/peer group or local environment and community are likely to be formed.

In conclusion, participation in CSA is not an isolated act by an individual but is deeply influenced by a broader context, including the individual's network with others such as family/peer group and people in the local community, as well as the physical environment in which they live. However, there are limitations in explaining family/peer and community interrelationships in this study. In addition, there is a paucity of previous research that focuses on family/peer dynamics and the impact of the physical environment, such as nature, on participation. Therefore, to gain a deeper understanding of how these relationships influence pro-environmental behaviors and contributions to the community, and ultimately lead to participation in CSA, further analysis is needed in future research.

Balancing expected gains and losses: consumer decision-making dynamics

Our theory shows that individuals' decisions are based on the balance between expected gains and expected losses for consumers. As explained in the previous section, individuals form attitudes and behaviors under the influence of their socio-cultural environment. These attitudes and behaviors influence the balance between expected gain and expected loss and risk acceptance in individual decision-making.

We identified sub-concepts such as "feeling the fairness in the content and price of the share" (sub-concept), representing monetary gains and losses. In addition, time-related losses such as "increasing time/effort spent on cooking vegetables at home" (extracted factor) and "pickup points in inconvenient locations" (extracted factor) were also mentioned as reasons for withdrawal (Galt et al. 2019a; Birtalan et al. 2020b). Based on these findings, the following two factors influence consumer decision-making: discrepancies between expected gains and experienced gains, and discrepancies between expected losses and experienced losses.

Previous research has shown that having many unwanted products, or few types of shared contents available, is one reason members leave CSA programs (Flora and Bregendahl 2012). Moreover, a choice experiment conducted with consumers in Connecticut interested in joining a CSA found that, regardless of prior CSA experience, there is a higher willingness to pay for shares that offer financial compensation when the harvest is poor (Yu et al. 2019). These findings and the result of our study on monetary gains and losses align with a prior study that consumers who participate in CSA tend to be risk-averse and avoid inequality (Bernard et al. 2020).

Based on the perspective of Expectation Disconfirmation Theory (Oliver 1980), receiving a smaller share than expected or requiring more effort reduces consumer satisfaction, the "variety of ingredients" and "money" (Core category) are considered key factors that directly link to consumer satisfaction with participation.

In addition to providing access to ingredients, CSA also highlights offering nonmaterial gains that consumers expect from participating in CSA: "food education and learning opportunities," "connections with people and nature," and "contribution to environmental and social issues" (Core category). However, previous studies have shown that among consumers' motivations for participation, interest in community building and learning about agriculture ranked lower than access to ingredients (Ostrom 2007). Furthermore, while some consumers recognize that participating in a CSA contributes to environmental sustainability, they have discontinued their memberships due to the effort required to cook the vegetables, which is consistent with the loss referred to as "time" (Core category) identified in our study. These findings suggest that the decision-making to participate in CSA is strongly influenced by the expectation of access to a "variety of ingredients" (Core category), and the impact of other categories such as "food education and learning opportunities," "contribution to environmental and social issues" and "connections with people and nature" (Core category) is generally small. Therefore, reducing the gap between financial expectations and experiences is seen as crucial to consumers' long-term commitment; for example, some farmers address this gap by offering a la carte options and compensation during poor harvests (Flora and Bregendahl 2012).

However, according to the Expectation Disconfirmation Theory, because positive discrepancies lead to satisfaction, it is conceivable that consumers who initially had little interest in building a community and perceived "complicated relationships" (Core category) as a loss associated with participation could develop positive relationships and build a community through interactions with people and nature. This could create a positive gap between expectation and experience, leading to a gain referred to as "connections with people and nature" (Core category). This can lead to an updating of the

balance of the seesaw of gain and loss and risk acceptance, potentially leading to greater commitment and settling into the community. Previous research has shown that the effect of the perceived value of a service is fully mediated by satisfaction, leading to repurchase intentions (Patterson and Spreng 1997). Therefore, by minimizing the monetary gap and providing intangible values that lead to satisfaction, it is conceivable that this could result in long-term commitment.

In conclusion, our theory underscores that consumer decision-making in CSA is fundamentally influenced by the interplay of expected gains and losses, which are deeply rooted in socio-cultural factors. The results of this study and previous research suggest that among the participation factors, the expectation of access to a "variety of ingredients" (Core category) has a significant impact compared to other core categories in terms of "gain." On the other hand, some enthusiastic members are attracted to CSA not only for tangible gains such as fresh produce but also for nonmaterial gains such as educational opportunities, community connections, and the ability to contribute to environmental and social problems. Critical to this decision-making process is the gap between consumer expectations and experience with the values and offerings of CSA producers. This alignment or mismatch between expected and experienced gains or losses, viewed through the lens of Expectation Disconfirmation Theory, updates the seesaw and plays a critical role in consumer satisfaction.

The study acknowledges significant limitations, primarily its focus exclusively on the consumer perspective, which overlooks crucial insights from producers. Understanding the producer's view of consumer expectations and the producer's ability to meet those expectations is essential to further refining the model in this study and requires further research.

Interplay of participation and social capital in CSA

Our study suggests the development and transformation of social capital associated with consumer participation. When consumers participate in farm work, volunteer activities, and farm management in a CSA, there is an opportunity to create a high-density network among consumers, producers, and other stakeholders. This can lead to the formation of social capital (Coleman 1988). Three forms of social capital are examined: obligations and expectations, information channels, and social norms. Social capital consisting of such a strong network is classified as bonding social capital (Patulny and Svendsen 2007). Because these factors increase consumer commitment, bonding social capital is important from the perspective of sustainable CSA. However, the presence of "overly strong relationships within the community" (extracted factor), "strict constraints within the community" (extracted factor), and "a lot of work on the farm" (extracted factor) suggest that strong relationships, obligations, and social norms within the CSA community can also encourage consumers to leave and inhibit CSA development (Poças Ribeiro et al. 2021; Ravenscroft et al. 2013).

Previous research has shown that members who experience more social capital benefits through participation in the CSA community are more likely to remain members (Flora and Bregendahl 2012). Furthermore, enthusiastic participants significantly changed their dietary habits (Feagan and Henderson 2009), and a study in California found that 82% of households whose diets had changed as a result of CSA participation

expressed a desire to continue membership (Perez et al. 2003). This suggests that members with higher levels of commitment improve their diets and participate in a cyclical process that encourages continued commitment. From our study and previous research, it can be inferred that bonding social capital plays a critical role in people's commitment and that the development and transformation of bonding social capital within the community can influence both long-term participation and withdrawal.

In addition, previous studies suggest that bridging social capital arises from weak networks formed (Granovetter 1973; Burt 1992) and has the potential to spread change from immediate communities to peripheral communities (Furness et al. 2022). The operation of CSA requires consumer engagement and linkages with external organizations when there is a lack of resources in the community, such as volunteer labor or knowledge, or when solving problems to achieve future goals, such as increasing scale. The importance of investing in bridging social capital is also mentioned, as it facilitates outreach to consumers with different resources outside the community and the incorporation of external funding (Pelin and Murat 2021).

Previous research has shown that there is CSA operating at full capacity with a waiting list for new members, despite having low levels of both bonding social capital and bridging social capital. However, this CSA communicates primarily via email with very little face-to-face interaction, and their purpose is limited to providing organic vegetables to local households (Furness et al. 2022). This suggests that the construction and transformation of social capital is not seen as important for a CSA that aims to continue operations by continually attracting new members, much like a typical transactional relationship between producers and consumers. However, as the results of our study show, CSA offers diverse values beyond mere food transactions, such as opportunities for interaction with people and food education, which also serve as factors for consumer participation. Therefore, the sustainable operation of CSA that offers diverse values requires the building of trust and long-term commitment from consumers, indicating the importance of both dense relationships within the community that build bridging social capital and weaker connections with external consumers and stakeholders that establish bridging social capital.

In conclusion, the sustainability and development of CSA are significantly influenced by social capital. Although numerous studies have examined the formation and importance of social capital in CSA, the changes in social capital resulting from individual participation and its reflexive nature remain largely unexplored. Furthermore, the synergies between bonding social capital and bridging social capital are not clear. In addition, the scope of this study did not extend to identifying specific changes in decision-making processes attributable to the transformation of social capital. Consequently, future research should delve into the roles, actions, and evolution of individuals within communities, using methods such as action research and in-depth interviews.

Practical implication

Insight for CSA promotors and farmers willing to practice CSA

The results of our study underscore that individuals are embedded in a socio-cultural environment in which decision-making within the family/peer group and relationships with the community are critical factors in shaping attitudes and behaviors. CSA

promoters and farmers interested in practicing CSA need to consider decision-making based on the lifestyles and values of the entire family/peer group and increase points of contact with them. Extracted factors such as "CSA having collaborations with other institutions (universities, schools, social movements)" (extracted factor) and "opportunities for children's food education" (extracted factor) suggest that contact with children can play an important role (Bonfert 2022; Morgan et al. 2018). In addition, "CSA farmers being present at farmers' markets" (extracted factor) influences consumer participation because consumers may perceive value beyond the availability of fresh produce through interactions with farmers at farmers' markets, which may lower their barriers to CSA participation (Farnsworth et al. 1996). This suggests that providing entry points through approaches other than CSA, such as programs at educational institutions or events at farmers' markets, can be effective.

For example, CSA could collaborate with school programs to educate children about sustainable agriculture and directly involve them in food production and environmental stewardship through experiential learning, thereby reaching more consumers. Previous studies suggest that teaching kitchens, which partner with local farmers and use mobile kitchens to cook local ingredients while implementing a food education curriculum at schools, farmers' markets, or farms, promote interdisciplinary collaboration in health, agriculture, and education and help build community ties (Cole et al. 2023). Another study shows that CSAs are being used in anti-poverty initiatives, particularly in selling food to schools for students from low-income families, and some CSA farmers also sell as cooperatives within school districts (Flora and Bregendahl 2012). Such literature and cases suggest that integrating practical agricultural and nutrition education in partnership with CSA farmers could enable CSA promoters to reach families and peers.

Our research shows that consumer decisions to participate in CSA are based on the premise that CSA is somewhat established in the area. Therefore, for widespread adoption of CSA and effective consumer outreach in specific areas, it is important to develop CSA promotion strategies that take into account the factors identified in our study. Promoters and farmers interested in practicing CSA should work to increase awareness of CSA and seek ways to communicate its value to consumers, with the goal of attracting a broader range of consumers. Collaborating with other institutions and related initiatives, making the value of CSA more tangible to consumers, and reducing barriers to participation, can encourage individual and family/peer decisions that lead to the successful practice of CSA.

Suggestion for consumers

Our study found that in regions or countries with high levels of consumer concern about food, one factor contributing to participation is that CSAs "serve as one of the market channels" (extracted factor) and consumers "recognize CSA as a tool (a pure food acquisition route)" (extracted factor) similar to supermarkets and farmers' markets (Farnsworth et al. 1996; Feagan and Henderson 2009). In addition, many consumers emphasize fairness of share and price, and among the factors extracted, those related to food sourcing, such as quality, share content, and traceability, were the most numerous. From these results, it can be concluded that many CSA farms offer values that are attractive and understandable to consumers, namely the provision of fresh and safe food ingredients.

However, our paper highlights that the significance of CSA extends beyond being just a food supply source. It acts as a platform for fostering deeper connections between local producers and consumers, and for addressing environmental and social issues. This multifaceted role can be seen as the true essence of CSA. By participating in CSA, consumers build new values and trust through interactions with local producers and fellow consumers. This not only mitigates concerns about food and agriculture but also strengthens community bonds. Such connections can invigorate local communities, enhance satisfaction with participation, and create mutually beneficial scenarios for both producers and consumers. Therefore, consumers should understand the non-material values and multifaceted characteristics that participation in a CSA brings.

Conclusion

In our study, a scoping review was conducted to clarify the various factors involved in CSA participation and their relationships, and consumer participation was theorized using the KJ method. Open coding was performed on 61 articles included in this review, and 306 factors were extracted. The relationships between these factors were then visualized and iteratively narrated to develop the theory. Through theory building, these factors were divided into the socio-cultural environment and the seesaw of gain and loss. The socio-cultural environment consists of four categories: individual, family/peer, local environment and community, and national agricultural frameworks, and the seesaw of gain and loss consists of two categories: gain and loss.

According to our theory, under the premise that consumers are embedded in a sociocultural environment, their decisions to participate in CSA are influenced by the balance between expected gains and losses. This balance changes according to individuals' risk acceptance and their perception of gains and losses, leading to decision-making. The embedded sociocultural environment influences this decision-making process, and it is suggested that discrepancies between expectations and post-participation experiences, as well as the transformation of social capital in the CSA community, lead to updates in their decision-making process.

While the proposed theory offers a comprehensive analysis based on existing literature, including practitioner insights, it also has limitations. Limitations of our study include that the scope of the scoping review is limited by the availability and accessibility of existing literature and that the findings obtained may not be fully generalizable to all CSA contexts due to differences in cultural, economic, and geographic settings.

In addition, the proposed theoretical framework needs to be validated and refined through further research. It should compare the degree of influence of each participation factor through surveys, action research, and case studies that examine the effectiveness and sustainability of CSA and its long-term impact on social capital. This could include longitudinal studies tracking changes in community cohesion, social capital, and overall well-being among CSA participants over extended periods. Examining how CSA participation influences local economic development and environmental sustainability could provide a more comprehensive understanding of its benefits and challenges.

In conclusion, by delineating the process of individual behavior formation and decision-making, our findings pave the way for future research and practices aimed at fostering sustainable agriculture based on community engagement.

Supplementary Information

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Supplementary Material 1.

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Author contributions
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Availability of data and materials
The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Competing interests
The authors declare that they have no competing interests.

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Publisher's Note

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