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Sustainable development goals and agricultural service subscriptions: Consumer behaviors in Cebu, Philippines

JAKE JOSHUA C. GARCES[1,2,♥]

[1]Department of Biology, College of Computing, Artificial Intelligence, and Sciences, Cebu Normal University. Osmeña Boulevard, Cebu City 6000, Philippines. Tel./fax.: +63-961-054-1198, ♥email: garcesjj@cnu.edu.ph

[2]Ethics Review Committee, Cebu Normal University. Osmeña Boulevard, Cebu City 6000, Philippines

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Abstract. *Garces JJC. 2026. Sustainable development goals and agricultural service subscriptions: Consumer behaviors in Cebu, Philippines. Asian J Agric 10: g100101. https://doi.org/10.13057/asianjagric/g100101.* As the Philippines faces growing challenges in food insecurity and unsustainable consumption, this study explores why many Cebuano consumers who support the Sustainable Development Goals (SDGs) are not actively participating in agricultural subscription services. These services, which connect consumers directly with local farmers, offer a promising way to promote sustainable food systems. Through a survey of 488 respondents across Cebu Island, the study identified three types of consumers: (i) General subscribers, (ii) Price-conscious consumers, and (iii) Quality-focused consumers. General subscribers showed the strongest sustainability alignment, with 58% actively minimizing food waste, compared to 29% of price-conscious consumers and 34% of quality-focused consumers, while regression and chi-square results identified age group, marital status, and education level as significant determinants of subscription. These findings conclude that consumer subscription behaviors are shaped not only by affordability and product quality considerations but also by the degree of alignment with sustainability values, emphasizing that stronger integration of SDG-oriented practices corresponds to more consistent participation in agricultural subscription services.

Keywords: Agriculture service subscriptions, Cebuano consumers, Cebu Island, Philippines, sustainable development goals

Abbreviations: ASS-SDGA: Agricultural Service Subscriptions for Sustainable Development Goal Achievement Scale, ASS: Agriculture Service Subscriptions, ESG: Environmental, Social, and Governance, GDP: Gross Domestic Products, GS: General Subscribers, PCC: Price-Conscious Consumers, QFC: Quality-Focused Consumers, SDG: Sustainable Development Goals, UN: United Nations

INTRODUCTION

Technological progress and industrialization since the 1980s have contributed to Philippine agricultural growth while intensifying environmental challenges such as deforestation, biodiversity loss, and climate vulnerability (Huang and Ren 2010; Williams 2011; McMahan and Estes 2015; Parmentola et al. 2022). Despite its declining share of GDP, agriculture remains critical for food security and livelihoods, with consumer demand shifting toward sustainable practices in response to ecological concerns and the SDG framework (Clarete 2018; Chow et al. 2025). Philippine agriculture thus faces the paradox of declining macroeconomic significance alongside persistent environmental externalities.

The COVID-19 pandemic accelerated digital adoption, giving rise to Agricultural Subscription Services (ASS)—prepaid, recurring arrangements for farm produce delivery that provide consumers with stable access to food and farmers with predictable income (Saloutos 1979; Maghirang et al. 2011; Collingham 2012; Wright 2014; Maharjan et al. 2025), catalyzing shifts toward biodiversity-friendly farming, reduced inputs, and alignment with the United Nations Sustainable Development Goals (SDGs) (UN 2015). In particular, SDG 2 ("Zero Hunger"), SDG 12 ("Responsible Consumption and Production"), and SDG 13 ("Climate Action") provide normative frameworks for evaluating agricultural transitions. In Cebu, these have manifested as weekly harvest boxes, cooperative-based vegetable subscriptions, and social media–driven farm-to-door logistics, mirroring global community-supported agriculture models.

Globally, subscription-based agriculture has been shown to reduce transaction costs, stabilize demand, and strengthen producer-consumer linkages, but diffusion depends on consumer trust, digital literacy, and alignment with sustainability values (Montfaucon et al. 2025). While studies in high-income countries have examined CSA, organic preferences, and digital agribusiness adoption, research on ASS in developing contexts remains limited (Lim 2023). In the Philippines, particularly Cebu, little is known about how consumers' demographic and psychographic factors interact with their sustainability values and SDG alignment to influence subscription adoption (Adelodun et al. 2025; Zhang et al. 2025). This gap is significant given the potential of ASS to reduce food waste, stabilize farm incomes, and support local food systems in a region where income inequality, digital divides, and cultural food practices shape consumer behavior (Petersen and Snapp 2015; Kim et al. 2022; Roy and Vasa 2025).

In the rural SDG framework, agriculture acts as a key driver for achieving various targets (Pretty et al. 2020; Scoones et al. 2020). Subscription models can directly impact SDG 2.1 (ending hunger), SDG 12.3 (reducing food waste

by half), and SDG 13.1 (building resilience to climate-related hazards). However, despite their potential, subscription-based agricultural services in the Global South remain insufficiently theorized. Current research mainly concentrates on consumer attitudes toward organic produce (Zepeda et al. 2006). Few explore how consumer alignment with SDGs mediates ASS adoption in low- to middle-income contexts such as the Philippines (Chan and Enticott 2023).

This study addresses these gaps through the case of Cebu, Philippines. Specifically, it aims to (i) profile the demographic and psychographic characteristics of ASS consumers, (ii) analyze the relationship between SDG alignment and subscription behaviors, and (iii) segment consumer groups based on motivations, product preferences, and sustainability orientations. It hypothesizes that Cebuano consumers exhibit significant demographic and psychographic differences that correspond to distinct ASS behaviors, and that higher SDG alignment is positively associated with sustainable practices such as reducing food waste and supporting local producers. Grounding on subscription agriculture in conjunction with technology adoption theories and rural SDG frameworks will contribute to new empirical evidence from a developing-country context. The findings are expected to inform both Philippine agricultural policy and broader discussion about sustainable consumption transitions in Southeast Asia.

MATERIALS AND METHODS

Sampling and sample size determination

Data collection was conducted from 8 January 2025 to 8 May 2025 using Google Mail, Google Forms, and Facebook as distribution channels for the questionnaire in Cebu Island, Philippines (Figure 1). A total of 504 questionnaires were collected, of which 16 were discarded due to incomplete or inconsistent responses, resulting in 488 valid responses. This yielded a valid response rate of 96.83%, which is considerably high compared to typical online survey standards (Kanosvamhira and Shade 2025). Sample size adequacy was determined using the Krejcie and Morgan (1970) formula, with a minimum requirement of 384 respondents at a 95% confidence level and 5% margin of error; the final sample of 488 thus exceeded this threshold, enhancing statistical reliability. However, reliance on digital platforms such as email and Facebook may have introduced sampling bias by favoring more digitally literate respondents, potentially underrepresenting farmers and consumers with limited internet access or lower digital proficiency. To geographically situate the study, a map of Cebu Island may be included if it is considered necessary for visualizing the survey coverage; otherwise, results are reported without it to avoid redundancy.

Selection criteria for respondents

The study used purposive sampling, targeting individuals who had either current or past experience with Agricultural Subscription Services (ASS). To maximize reach, convenience sampling was also employed by disseminating the survey across consumer groups on Facebook and Gmail lists associated with farm cooperatives, online subscription platforms, and community-supported agriculture initiatives. Eligibility criteria required that respondents (i) were 18 years or older, (ii) had knowledge of or experience with ASS-based purchasing, and (iii) were residents of Cebu Island. This ensured alignment with the study's objective of analyzing active consumer behavior within local agricultural subscription contexts.

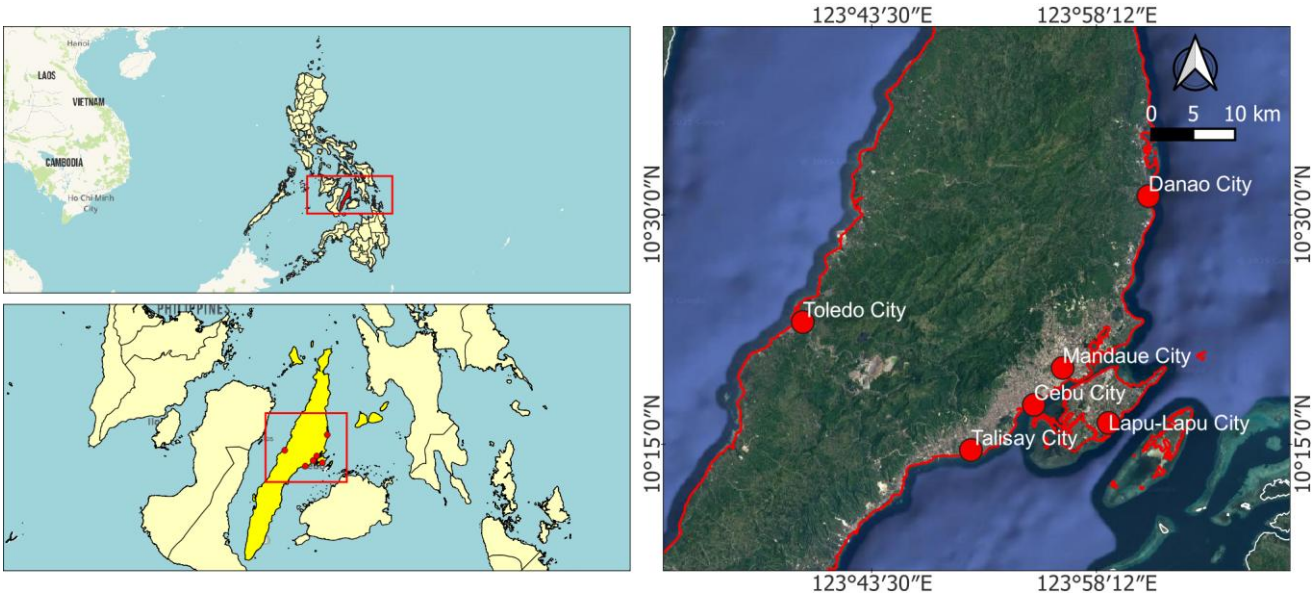

Figure 1. Map of Cebu Island, Philippines, showing the sampling sites where research questionnaires were distributed (red dots): 1. Central Region – Site 2: Mandaue City (10°20′N, 123°56′E), Site 3: Cebu City (10°17′35″N, 123°54′07″E), and Site 5: Lapu-Lapu City (10°15′58″N, 123°59′50″E); 2. Northern Region – Site 6: Danao City (10°31′14″N, 124°01′37″E); 3. Southern Region – Site 4: Talisay City (10°14′38″N, 123°50′00″E); and 4. Eastern Region – Site 1: Toledo City (10°23′N, 123°39′E)

Data collection

Survey instrument design

A self-developed questionnaire was designed and validated through a two-step process: expert review by three specialists in agricultural economics and consumer behavior, and a pilot test with 30 respondents. The instrument comprised three sections: 1. Demographics – Seven key attributes: gender, marital status, age, income, occupation, education, and place of residence (Yusuf et al. 2014), 2. ASS behaviors – Three questions covering product types subscribed to, subscription duration, and primary motivations, 3. ASS-SDGA Scale (Agricultural Service Subscriptions for Sustainable Development Goal Achievement) – A 5-point Likert scale adapted from Joshi et al. (2015), measuring agreement with statements linking ASS practices to SDG 2 (food security), SDG 12 (responsible consumption), and SDG 13 (climate action). Items were positively worded to avoid confusion and minimize acquiescence bias.

Data analysis

The study used a comprehensive approach to analyze consumer behavior. Descriptive statistics (mean ± SD) summarized demographic and behavioral patterns. A two-step cluster analysis classified consumers into segments, followed by Chi-square tests and one-way ANOVA with Scheffé's post-hoc tests to examine differences between groups. Multiple regression models and Chi-square tests identified factors influencing subscription decisions. Finally, discriminant analysis was employed to identify the most influential variables differentiating the consumer clusters. The data was analyzed using JASP statistical software, Version 0.18.3. The reliability of the survey instrument was confirmed with Cronbach's alpha coefficients exceeding 0.70, while construct validity was established through exploratory factor analysis with varimax rotation (loadings > 0.60). An expert panel review ensured content validity. Statistical significance was set at $p < .05$, with results at $p < .001$ interpreted as highly significant.

RESULTS AND DISCUSSION

Demographics, ASS patterns, and ASS-SDGA assessment

Descriptive statistical analysis was conducted to examine demographic variables such as gender, age, marital status, education level, occupation, place of residence, and personal monthly income (Table 1). A majority of participants were married (54.91%) and held a college or university degree (58.80%). Geographically, over half of the respondents (54.1%) resided in the Central region (Table 2). Regarding occupation, the service sector was the most common (23.40%), followed by the business sector (12.3%). The income data indicated that the largest group of participants earned between Php 10,0001.00 and Php 20,000.00 monthly (32.37%), while a smaller portion earned less than Php 10,000 (22.95%). Very few respondents (3.07%) reported incomes above Php 150,001.00. The consumer subscription behaviors also revealed key patterns in product choice, delivery frequency, and motivations (Table 2). The most frequently subscribed products were fruits (N =128; 26.20%), grains and cereals (N = 111; 22.70%), and vegetables (N = 91; 18.60%). Aquatic products were the least purchased, with only 22 respondents (4.50%). The predominant delivery interval was weekly, accounting for 47.95% of total responses. In terms of motivation, the majority of consumers (N = 335; 31.4%) indicated that quality assurance was their highest priority.

Table 1. Participants' demographic profile for Agricultural Service Subscriptions (ASS)

	Demographic variables	*N* (%)	Demographic variables	*N* (%)
Gender			Marital status	
	Male	227 (46.51%)	Unmarried	220 (45.08%)
	Female	261 (53.48%)	Married	268 (54.91%)
Age			Income level	
	Under 18 years old	13 (27.00%)	Below Php 0-10,000.00	112 (22.95%)
	18-25 years old	60 (12.30%)	Php 10,0001.00-Php 20,000.00	158 (32.37%)
	26-35 years old	93 (19.15%)	Php 20,001.00-Php 35,000.00	81 (16.60%)
	36-45 years old	148 (30.30%)	Php 35,001.00-Php 60,000.00	60 (12.30%)
	46-55 years old	98 (20.10%)	Php 60,001.00-Php 100,000.00	28 (5.70%)
	56-65 years old	59 (12.10%)	Php 100,001.00-Php 150,000.00	34 (6.96%)
	66 years old and above	17 (3.50%)	Php 150,001.00 and above	15 (3.07%)
Occupation			Education level	
	Business	60 (12.30%)	Junior high school	13 (2.70%)
	Industry	27 (5.50%)	Senior high school	70 (14.30%)
	Military and civil servants	54 (11.10%)	College or university	287 (58.80%)
	Service industry	114 (23.40%)	Graduate school or above	117 (24.00%)
	Manufacturing	43 (8.80%)	Others	1 (0.20%)
	Freelance	35 (7.00%)	Location	
	Hospitality	18 (3.70%)	Central region	264 (54.10%)
	Homemaker	34 (7.00%)	Northern region	130 (26.60%)
	Student	55 (11.30%)	Southern region	83 (17.00%)
	Others	48 (9.80%)	Eastern region	11 (2.30%)

Table 2. Agricultural Service Subscriptions (ASS) behavior

Dimensions	*N* (%)	Dimensions	*N* (%)
Purchased products[1]		Subscription period	
Grain and cereals	111 (22.70%)	Daily delivery	115 (23.56%)
Vegetables	91 (18.60%)	Weekly delivery	234 (47.95%)
Fruits	128 (26.20%)	Monthly delivery	95 (19.46%)
Processed products[2]	30 (6.10%)	Quarterly delivery	37 (7.58%)
Specialty crops[3]	66 (13.50%)	Annual delivery	7 (1.43%)
Livestock products[4]	32 (6.60%)	Subscription motivation	
Aquatic products[5]	22 (4.50%)	Reasonable price	280 (26.20%)
Other	8 (1.60%)	Quality assurance	335 (31.40%)
		Trusted origin	239 (23.35)
		Environmental sustainability	204 (19.10%)

Note: [1]Grains and cereals: Rice, wheat, and other grains; [2]Processed products: dried mangoes, chicharon (pork cracklings), danggit (dried fish), otap, longanisa cebu, lechon; [3]Specialty crops: Sugarcane, coffee, tea, and spice crops; [4]Livestock products: Meat and eggs; [5]Aquatic products: Algae and aquatic animals (clams, shrimps, lobsters)

The psychometric properties of the Agricultural Service Subscriptions for SDG Achievement (ASS-SDGA) scale were found to be highly reliable, with a Cronbach's α of 0.944 (Table 3), which is well above the acceptable threshold of 0.700. All corrected item-total correlation coefficients also exceeded 0.300, confirming the scale's internal consistency and one-dimensionality. The descriptive analysis of the scale's items showed that the highest mean score was for the statement, "The subscription model for agricultural products promotes environmentally friendly practices, such as the use of organic and certified products" M = 4.45 (SD = 0.665) (Table 3). This was followed closely by two other high-scoring items: one emphasizing the role of subscription models in stabilizing farmer cash flow and improving product quality M = 4.42 (SD = 0.667), and another highlighting the reduction in transportation needs through direct-to-consumer sales M = 4.40 (SD = 0.681) (Table 3).

Analysis of agricultural service subscriptions

A two-step cluster analysis segmented consumers into three distinct groups based on their subscription behaviors, with statistically significant differences in their purchasing patterns and values. The General Subscribers (GS) comprised 28.27% (N = 138) of the sample, demonstrating broad acceptance without strong motivational preferences, and primarily chose fruits (28.00%) with a weekly delivery schedule (39.00%). The Price-Conscious Consumers (PCS), making up 29.71% (N =145), were driven by cost, with only 40.00% valuing quality assurance and a mere 1% expressing concern for environmental sustainability; this group predominantly subscribed to grains and cereals (37.00%) with a weekly delivery preference. The largest segment, the Quality-Focused Consumers (QFC), at 50.40% (N = 205), was motivated chiefly by a demand for high-quality products and consistently chose premium fruits (64.00%) and weekly delivery (Table 4).

Chi-square analyses revealed statistically significant associations between subscription patterns and three demographic variables: age (χ^2 = 45.928, p < 0.001), marital status (χ^2 = 12.365, p = 0.005), and education level (χ^2 = 20.891, p = 0.027). Specifically, respondents aged 36–45 showed the highest propensity to subscribe to agricultural services. Married individuals displayed a stronger inclination toward quality-focused subscriptions, while those with higher levels of education showed a greater preference for these services. Conversely, other demographic factors such as gender (χ^2 = 1.444, p = 0.337), occupation (χ^2 = 21.834, p = 0.344), location (χ^2=9.100, p=0.289), and monthly income (χ^2=11.110, p = 0.405) did not show statistically significant relationships with subscription patterns. These results underscore the critical role of age, marital status, and educational background as key determinants in segmenting consumer behaviors (Table 5).

Table 3. Agricultural Service Subscriptions for SDG achievement levels

Dimensions	Items	Mean	SD	Significance (two-tailed)	Critical ratio	Corrected item total correlation	Alpha if item deleted
Social	[1] Production willingness (SDG1)	4.31	0.676	0.000	7.982	0.745	0.938
	[2] Boost economic growth (SDG8)	4.33	0.692	0.000	8.402	0.830	0.935
	[3] Mitigate aging workforce impact (SDG8)	4.32	0.731	0.000	5.024	0.800	0.936
	[4] Use of certified products (SDG2)	4.44	0.667	0.000	11.502	0,.764	0.939
Economic	[5] Reduce waste (SDG2)	3.43	0.673	0.000	6.441	0.795	0.938
	[6] Expand job opportunities (SDG8)	4.31	0.682	0.000	6.325	0.807	0.936
	[7] Stabilizing cash flow (SDG12)	4.42	0.667	0.000	5.740	0.800	0.936
Environmental	[8] Reduce transportation routes (SDG13)	4.40	0.681	0.000	5.165	0.746	0.940
	[9] Encourage sustainable agriculture (SDG15)	4.45	0.665	0.000	6.784	0.838	0.943
						Cronbach's α	0.944

Table 4. Analysis of demographic influences on ASS behavior clusters

Dimensions	Cluster 1 general subscribers *N* = 138 *N* (28.27%) *N* (%)	Cluster 2 price-conscious subscribers *N* = 145 (29.71%) *N* (%)	Cluster 3 quality-focused subscribers *N* = 205 (50.40%) *N* (%)
Subscription motivation (multiple-choice questions)			
Reasonable price (T)	138 (100.00%)	139 (10.000%)	2 (0.98%)
(F)	0	0	203 (90.02%)
Quality assurance (T)	138 (100.00%)	55 (37.93%)	150 (68.00%)
(F)	0	90 (62.07%)	55 (26.83%)
Trusted origin (T)	138 (100.00%)	41 (28.28.00%)	135 (62.00%)
(F)	0	104 (71.7200%)	70 (34.14%)
Environmental sustainability (T)	138 (100.00%)	1 (0.69%)	73 (35.61%)
(F)	0	138 (95.17%)	146 (67.00%)
Purchased items (multiple-choice questions)			
Grains and cereals	23 (18.00%)	51 (375.00)	37 (17.00%)
Vegetables	25 (19.00%)	22 (16.00%)	44 (20.00%)
Fruits	36 (28.00%)	28 (2.000%)	64 (29.00%)
Processed products	9 (7.00%)	15 (7.00%)	11 (5.00%)
Specialty crops	19 (15.00%)	22 (10.56%)	21 (10.24%)
Livestock products	8 (6.00%)	1 (0.69%)	11 (5.00%)
Aquatic products	8 (6.00%)	0	14 (6.00%)
Other	10 (7.25%)	3 (2.11%)	3 (1.00%)
Subscription period			
Daily delivery	39 (28.26%)	45 (32.00%)	43 (20.00%)
Weekly delivery	39 (28.26%)	58 (42.00%)	105 (48.00%)
Monthly delivery	34 (24.63%)	20 (14.00%)	39 (19.02%)
Quarterly delivery	16 (11.59%)	17 (11.72%)	17 (8.00%)
Annual delivery	10 (7.25%)	5 (4.00%)	1(0.48%)

Table 5. Demographic differences in ASS clusters

Demographic variables	General	Price	Quality	Chi-square	*p*
Gender					
Male	42	56	91	1.444	0.337
Female	88	83	128		
Age					
Under 18 years old	3	5	5	45.928***	0.000
18-25 years old	20	16	24		
26-35 years old	26	45	22		
36-45 years old	41	42	65		
46-55 years old	24	23	51		
56-65 years old	14	6	39		
66 years old and above	2	2	13		
Marital Status					
Unmarried	55	70	73	12.365 *	0.005
Married	75	69	146		
Education Level					
Junior high school	3	6	4	20.891*	0.027
Senior high school	14	26	30		
College or university	82	86	119		
Graduate school or above	30	21	66		
Other	1	0	0		
Occupation					
Business	8	22	30	21.834	0.344
Industry	6	8	13		
Military and civil servants	15	17	22		
Service Industry	36	24	54		
Manufacturing	11	17	15		
Freelance	12	8	15		
Hospitality	2	4	12		
Homemaker	10	11	13		
Student	18	16	21		
Other	12	12	24		

Location					
Central region	70	72	122	9.110	0.289
Northern region	35	43	52		
Southern region	19	21	43		
Eastern region	6	3	2		
Income level					
Below Php 0-10,000	27	37	49	11.110	0.405
Php 10,0001-Php 20,000	51	48	58		
Php 20,001-Php 35,000	21	20	40		
Php 35,001-Php 60,000	15	16	29		
Php 60,001-Php 100,000	7	6	15		
Php 100,001-Php 150,000	4	5	7		
Php 150,001 and above	5	7	21		

Note: *: $p < 0.05$, ***: $p < 0.001$

Table 6. SDG achievement level differences in ASS behavior clusters

Dimensions	Items	Cluster 1 general		Cluster 2 price		Cluster 3 quality		F	*p*	Post hoc test
		M	SD	M	SD	M	SD			
Social	[1] Production Willingness (SDG1)	4.45	0.65	4.23	0.75	4.29	0.66	4.990*	0.000	(1) > (2),(3)
	[2] Boost economic growth (SDG8)	4.55	0.63	4.39	0.70	4.21	0.75	4.809*	0.013	(1) > (3)
	[3] Mitigate aging workforce impact (SDG8)	4.50	0.61	4.35	0.71	4.24	0.78	4.023*	0.019	(1) > (3)
Economic	[4] Use of Certified Products (SDG2)	4.43	0.69	4.33	0.74	4.37	0.60	0.755	0.471	
	[5] Reduce waste (SDG2)	4.38	0.70	4.30	0.74	4.33	0.62	0.416	0.660	
	[6] Expand job opportunities (SDG8)	4.46	0.66	4.35	0.69	4.25	0.68	4.148*	0.016	(1) > (3)
	[7] Stabilizing cash flow (SDG12)	4.47	0.67	4.37	0.67	4.32	0.66	2.064	0.128	
Environmental	[8] Reduce transportation routes (SDG13)	4.45	0.69	4.37	0.74	4.33	0.63	1.384	0.252	
	[9] Encourage sustainable agriculture (SDG15)	4.51	0.60	4.34	0.69	4.34	0.66	4.115*	0.007	(1) > (3)

Note: *: $p < 0.05$

Table 7. Determinants of ASS subscriptions

Variable	Coefficient (β)	*p*-value	Significance
Age	0.283	0.001	Significant
Marital status	0.231	0.003	Significant
Education level	0.198	0.005	Significant
Quality assurance	0.354	<0.001	Highly significant
Reasonable price	0.298	0.001	Significant
Trusted origin	0.276	0.002	Significant
Gender	-0.045	0.210	Not significant
Income level	0.067	0.154	Not significant

Table 8. Relationship between several demographic factors and subscription behavior

Variable	Chi-square (χ^2) value	*p*-value	Significance
Age group vs. subscription	12.89	0.002	Significant
Marital status vs. subscription	9.75	0.007	Significant
Education level vs subscription	8.42	0.009	Significant
Gender vs. subscription	1.15	0.283	Not significant
Occupation vs. subscription	2.51	0.113	Not significant

Differences in ASS-SDGA among ASS behavior clusters

A comparative analysis of approval ratings across the three consumer clusters revealed statistically significant differences in several key items related to sustainability and economic impact. General Subscribers (GS) consistently exhibited a more positive inclination towards factors promoting production stability, economic advancement, and environmental sustainability compared to the Quality-Focused Consumers (QFC). Specifically, GS showed a significantly higher mean score for "Production Willingness" M = 4.45 (SD = 0.65) compared to both the Price-Conscious Subscribers (PCS) M = 4.23 (SD = 0.75) and QFC M = 4.29 (SD = 0.66). GS also significantly outperformed QFC in their agreement with items related to economic growth M = 4.55 (SD = 0.63) vs. M = 4.21 (0.75), mitigating the impact of an aging workforce M = 4.50 (SD = 0.61), expanding job opportunities M = 4.46 (SD = 0.66), and encouraging sustainable agriculture M = 4.51 (SD = 0.60) vs. M = 4.34 (SD = 0.69) (Table 6). In contrast, QFC appeared to be less influenced by these macro-level outcomes. No significant differences were found between the clusters for the items "Use of Certified Products" and "Reduce Waste."

Several demographic and motivational factors were found to have a statistically significant influence on a consumer's decision to subscribe to agricultural services. Regression analysis showed that age ($p = 0.001$), marital status ($p = 0.003$), and education level ($p = 0.005$) all had a positive effect, indicating that older, married, and more educated individuals are more likely to subscribe (Tables 7 and 8). Conversely, gender and income level were not found to be statistically significant. Chi-square tests also revealed a significant relationship between these same three demographic factors and subscription behavior. Additionally, motivational factors were key drivers, with

quality assurance ($p < 0.001$) being the most significant determinant, followed by reasonable price ($p = 0.001$) and trusted origin ($p = 0.002$) (Table 9). This highlights that consumers are primarily motivated by the perceived quality, value, and reliability of the products. Based on the analysis of eigenvalues and Wilks' Lambda (Table 9), the first discriminant function is the primary factor distinguishing patterns of subscription behavior. This function accounted for 94.41% of the total variance, had an eigenvalue of 0.048. Its statistical significance was confirmed by Wilks' Lambda (0.956) and the chi-square test results ($\chi^2 = 18.334$, $p < 0.01$**)**. In contrast, the second discriminant function was negligible, explaining only 4.6% of the variance with a lower eigenvalue of 0.002 and a near-unity Wilks' Lambda (0.956) (Table 9).

The group centroids analysis revealed that all three consumer segments demonstrate distinct motivational patterns (Table 11). The Quality-Focused Consumers (QFC) show a negative centroid on Function 1 (-0.211), indicating a lower emphasis on broad economic benefits like "Boost Economic Growth" (Function 2 = 0.004), and a stronger focus on product quality. In contrast, Price-Conscious Consumers (PCC) have a positive centroid on Function 1 (0.160) and a negative one on Function 2 (-0.035), reflecting moderate support for economic growth and limited alignment with sustainability goals. The General Subscribers (GS) exhibit positive centroids on both functions (Function 1 = 0.191; Function 2 = 0.045), suggesting a more balanced set of motivations that combine economic and environmental considerations (Table 10). The agricultural subscription service model contributes to several Sustainable Development Goals (SDGs). It aligns with SDG 2: Zero Hunger and SDG 12: Responsible Consumption and Production by promoting food security and reducing food waste through the use of certified and organic products (Table 11). The services also support SDG 8: Decent Work and Economic Growth by providing a stable income for farmers. Furthermore, the direct-to-consumer model contributes to SDG 13: Climate Action by reducing the carbon footprint from transportation, and promotes environmentally friendly practices that align with SDG 15: Life on Land.

Discussion

The distinct consumer segments identified in the study, such as (a) General Subscribers (GS), (b) Price-Conscious Consumers (PCS), and (c) Quality-Focused Consumers (QFC), demonstrate behavioral patterns shaped by different motivational factors. These patterns define their consumption tendencies and demand structures, consistent with prior research on segmented behaviors within the online food market (Zhao et al. 2021; Malone and Thomsen 2024). The differences between clusters stem from their main value focus. The largest group, the Quality-Focused Consumers, is motivated by a desire for high-quality products. This group's selection of subscriptions is less affected by broader factors like economic growth (SDG 8) or environmental sustainability, indicating a more personal, product-centered motivation. This contrasts with findings in Europe, where quality-focused consumers were more likely to endorse food system sustainability when quality was framed in terms of provenance and traceability (Schmidt et al. 2023). This highlights that cultural framing strongly mediates how sustainability resonates with different segments.

Table 10. Centroid functions for different subscription behavior clusters

Cluster	Function 1	Function 2
Cluster 1 general	0.191	0.045
Cluster 2 price	0.160	-0.035
Cluster 3 quality	-0.211	0.004

Table 11. ASS links to several SDGs, highlighting their potential contribution to global sustainability targets

SDG	Implication for ASS
SDG 2: Zero hunger	Promotes food security and certified products
SDG 8: Decent work and economic growth	Boosts economic growth and job opportunities
SDG 12: Responsible consumption and production	Encourages responsible consumption and reduces waste
SDG 13: Climate action	Reduces transportation-related emissions
SDG 15: Life on land	Encourages sustainable agriculture

Table 9. Discriminant function coefficients for SDG achievements

Function		Eigenvalue	% of variance		Wilks' Lambada		Chi-Square	
1	Items	0.048	94.41		0.956		18.334**	
			Unstandardized canonical Discriminant function Coefficients		Standardized canonical Discriminant function Coefficients		Structure matrix	
			Function 1	Function 2	Function 1	Function 2	Function 1	Function 2
	Boost economic growth		2.088	-0.065	1.434	-0.044	0.719*	0.695
	Reduce waste		-1.479	1.530	-0.997	1.031	0.031	1*
	Constant		-2.642	6.352				

Note: *: $p < 0.05$, **: $p < 0.005$

In contrast, general subscribers display a more balanced set of motivations, valuing economic and environmental benefits along with product quality. This segment is more positively inclined toward factors like production stability and economic growth. Their high involvement in food waste reduction indicates they are more open to messaging that highlights the broader societal impacts of their purchases. Price-conscious consumers are mainly motivated by cost, with little concern for environmental sustainability. These findings are supported by international studies in India and Vietnam, where subscription models were also segmented by affordability and perceptions of food safety (Nguyen 2023; Patel et al. 2024). This study's finding that age, marital status, and education are significant determinants of subscription behavior is consistent with this broader trend, as individuals aged 36 to 45 with higher education levels showed a greater propensity to subscribe. This suggests that life-stage factors play a key role in shaping consumer preferences.

The findings from this study directly link agricultural subscription services to specific Sustainable Development Goals (SDGs). The promotion of certified and organic products supports SDG 2: Zero Hunger and SDG 12: Responsible consumption and production by encouraging sustainable practices and reducing food waste. The positive association between subscription models and the stabilization of farmer income and job creation directly supports SDG 8: Decent work and economic growth. The reduction of transportation needs through direct-to-consumer sales contributes to SDG 13: Climate action, and the promotion of environmentally friendly practices aligns with SDG 15: Life on land. This study contributes to the limited empirical research on whether sustainability explicitly influences consumer decisions (Freedman and King 2016), providing evidence that these factors do play a role. The differences in value orientation among the clusters underscore the importance of tailoring agricultural subscription models to align with the specific priorities of each segment. Marketing efforts for general subscribers may benefit from emphasizing sustainability, while messaging for QFC should emphasize premium product quality. These strategies are consistent with prior studies indicating that promotional efforts highlighting economic dimensions can positively influence consumer engagement (Iyengar et al. 2022; Ali et al. 2025).

This study is subject to several limitations that need to be considered. Most notably, the research was conducted exclusively with a Cebuano population, which may limit the generalizability of the findings to other cultural contexts within the Philippines or to other countries. For example, international research shows that priorities in more industrialized ASEAN markets like Singapore emphasize convenience, while rural populations in Indonesia associate services with trust in community-based networks (Rahman et al. 2024). The findings also rely on self-reported data, which may be subject to social desirability bias. Furthermore, while the study examined associations between subscription behavior and alignment with SDGs, it did not establish causal relationships. However, the importance of replicating this study in other regions or countries cannot be overstated, as it will validate the demographic and motivational patterns identified. Researchers could also explore the specific types of certified and organic products that consumers prefer, providing a more detailed understanding of their purchasing behaviors and their connection to sustainability goals. Future investigations should also incorporate established theoretical frameworks to explore further the links between consumer behavior and engagement with SDG-related objectives. Specifically, cross-country comparative studies and policy experiments testing incentive structures could provide deeper insights into the socio-economic and institutional conditions that enhance or inhibit sustainable subscription engagement (Kuusisto 2018).

Cebuano consumers engage with agricultural subscription services in distinct ways, shaped by their values, life stages, and socio-economic backgrounds. While general subscribers are more sustainability-driven, quality-focused consumers prioritize premium products, and price-conscious consumers remain largely indifferent to environmental concerns. These patterns mirror international trends, such as in India and Vietnam, where affordability and food safety dominate, or in Europe, where sustainability resonates more when linked to traceability. However, the Cebuano context shows that sustainability messaging must be culturally grounded and tailored to each segment's motivations. To strengthen participation in agricultural subscriptions, local governments should implement targeted awareness campaigns that frame sustainability in relatable terms—such as food security, family health, and community resilience. Additionally, offering tiered subscription incentives, integrating services into barangay-level programs, and supporting farmer cooperatives with digital tools can bridge the gap between consumer values and action. Aligning these efforts is crucial with SDG priorities, local policymakers which can foster more inclusive, sustainable, and resilient food systems across the region.

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