Research Report:
For Young Americans, Sustainable Is Not Organic

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Abstract

Millennials and Gen Z consumers are some of the most consumption-oriented groups in the United States. As these young Americans transition into higher paying jobs, their impact on the food industry is expected to compound. Data from a web-based survey of 1,351 young Americans were used to conduct a cluster analysis and an ordered probit used to investigate the impact of demographics and purchasing behavior on cluster membership. Four costumer segments were identified: committed, farm-to-fork, unattached, and skeptic. Results suggest that cluster membership is driven by personal motives, particularly the desire to contribute to the local food system and support local communities.

Keywords: agriculture, cluster analysis, consumer segment, local foods, ordered probit, organic, sustainable, young consumers

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Introduction

Individuals belonging to the Millennial and Gen Z generations are typically considered the most consumption-oriented Americans of all time. Millennials (those born between 1981 and 1996) are the largest living generation in the United States and usually described as progressive, open to trying new foods, and willing to value sustainable food attributes (Macke, 2016). Gen Z consumers (those born between 1997 and 2008) were introduced to healthy lifestyle choices and sustainable living at an earlier age than previous generations (Twenge, 2017). Several studies have reported that these young consumers seem to have abundant access to information on food, value healthy eating, and are willing to pay for it.

As Americans increase their consumption of fruits and vegetables (U.S. Department of Agriculture, 2019) and young Americans transition into higher paying jobs, it is likely that a larger portion of their income will be dedicated to consuming fruits and vegetables. These trends are likely to increase the influence of Millennials and Gen Z consumers in food systems and presents important opportunities for growers and food handlers.

Understanding consumers' values and beliefs can help predict consumers' attitudes and purchasing intentions. Previous studies have shown how well environmental and social values correlate with attitudes and buying behavior. Researchers have reported the strong connection between messages that convey how foods are produced and marketed and consumers' values and attitudes (Zepeda and Deal, 2009; Lusk, 2018; Heo and Muralidharan, 2019). This study investigates the values of Millennials and Gen Z individuals toward organic, local, sustainable, and small family farming systems. Among all food attributes, environmental (i.e., organic and sustainable) and social (i.e., local and small-family farms) features seem to be gaining attention among Americans (Darby et al., 2008; Hu et al., 2011). While most young adults seem to prefer attributes that convey environmental and social benefits, marketing strategies and policies will likely have different effects for different groups of consumers.

Market Segmentation

Markets are rarely homogeneous, and market segmentation is a common and effective approach to reach groups of consumers who think and behave similarly. Cluster analysis has been widely used to segment consumers based on their food values and attitudes. Market segmentation can help industry marketers generate appropriate targeting, communication, and encouraging messages to help different clusters of consumers make sustainable purchases. Using market segments can allow food marketers to make attribute claims more relevant by providing insights on how clusters of young consumers value different environmental and social attributes. Supplying foods with attributes that align with values can help marketers develop trust relationships with these two generations, which can result in long-term loyalties for products and businesses. This study complements previous research with a comprehensive empirical analysis that identified different young consumer segments with regards to their values on environmental (i.e., organic and sustainable) and social (i.e., local and small family farms) food attributes.

Data and Methodology

Data for this analysis come from a 2017 web-based survey of university students, who provide a convenient sample to investigate Millennials and Gen Z consumers' perceptions toward food attributes (Heo and Muralidharan, 2019). The invitation email included the link to the Qualtrics survey. To increase participation rate, a drawing of ten $5 gift cards was offered for those who completed the survey before April 5, 2017. We received 2,047 responses, of which 1,954 were complete surveys, for a 96% completion rate.

The questionnaire covered four thematic areas of students' perceptions of food. Specifically, the questionnaire asked students to report the importance they placed on fresh produce attributes such as organic (*ORGANIC*), local (*LOCAL*), sustainable (*SUSTAINABLE*), and small family farms (*SMALL*). The survey asked about respondents' perceptions of the importance of credence attributes by asking them to slide bars from 0 (not important) to 100 (very important). Slider bars are an interactive tool that capture respondents' perceptions in a way that is more engaging, more mobile friendly, and may produce superior data relative to traditional Likert-type scales (Roster, Lucianetti, and Albaum, 2015). The questionnaire included 21 questions that ranged from student demographics to respondents' involvement in extracurricular activities.

The subsample for this study included 1,351 undergraduate students enrolled in 2017 at a large Midwestern university. Of them, 385 (29%) were freshmen, 352 (26%) were sophomores, 304 (22%) were juniors, and 313 (23%) were seniors. The proportion of students by year of enrollment was consistent with records from the university admissions office for 2017 (personal interview with Admissions officer).

Segments of Millennials and Gen Z consumers with similar perception functions were identified using a cluster analysis performed in a two-stage process. First, we used a hierarchical clustering with Ward's minimum-variance method to analyze the relative factor scores for *LOCAL*, *ORGANIC*, *SUSTAINABLE*, and *SMALL* using the squared Euclidean distance as the (dis)similarity measure. Ward's linkage combines observations whose merger increases the overall within-cluster variance (i.e., the homogeneity of clusters) to the smallest possible degree. One of the advantages of using Ward's linkage is that it yields clusters of similar size with similar degrees of tightness (Mooi, Sarstedt, and Mooi-Reci, 2018). The number of clusters was determined using a combination of the Duda–Hartand index, the Kalinksi–Harabasz pseudo-*F*-index, and the ω_k criterion.

Taking indices and criterion together, the results suggest a four-cluster solution for segments. Clusters were profiled using a one-way analysis of variance (ANOVA) comparison of means, which confirmed that attribute differences in means were significant across clusters. The second step in the cluster analysis included a partitioning *k*-means method, using the grouping from the Ward's linkage analysis as input for the starting partition of clusters. The *k*-means method selects the centers of the initial clusters from the first observations and assigns the other observations to the nearest cluster with the aim of minimizing within-cluster variation. The *k*-means process was repeated until convergence was achieved. This study explored the overlap in the two cluster

procedures (Ward's linkage and *k*-means) using a cross tabulation. Results show a strong degree of overlap (> 80%) between the two cluster procedures.

Last, we used an ordered logit model to investigate the impact of demographics, purchasing behavior, and community involvement on consumer segments. The ordered logit is an appropriate framework to model cluster membership where the observed variable has natural ordering (Greene, 2003). Thus, this study assumed that cluster membership follows a natural order, in which individuals in the committed cluster (first cluster) have high expectations for all attributes and individuals in the skeptic clusters have low expectations for all attributes (fourth cluster), but the distances between adjacent levels of membership are unknown.

Results and Discussion

Table 1 illustrates the demographic characteristics for each consumer segment. Cluster 1, the largest segment, represents 33% of the sample (426 students). Individuals in cluster 1, labeled "committed," strongly valued all four credence attributes as important, as evidenced by the highest average values across all attributes (within column). The committed segment included a higher share of Millennials and Gen Z consumers purchasing at farmers' markets (53%), being female (69%), seeking opportunities for campus/community involvement (59%), being out-of-state or international students, and living in on-campus housing.

Consumers in cluster 2, labeled "farm-to-fork," made up 27% of the sample (336 students) and had high preference for attributes commonly related to local food systems,—such as local, sustainable, and small family farming—but not with organic farming. Other researchers have reported how the corporatization of organic markets is likely to drive consumers and producers away from organic food products (Hu et al., 2011). The farm-to-fork segment comprises individuals with an agricultural background (47%), coming from Midwestern states (74%), and enrolled in an agricultural major (28%). While the committed and farm-to-fork segments are different, Millennials and Gen Z consumers in the farm-to-fork cluster shared some demographic similarities with consumers in cluster 1. They reported similar shopping behavior, and similar proportions of females, involvement in campus/community events, and on-campus housing.

Consumers in cluster 3 (labeled "unattached," made up 26% of the sample (333 students) and had moderate expectations for all features. They did not show high preferences for any of the attributes. This group had mean score intermediate between cluster 2 and cluster 4 for most variables. For example, 39% of consumers in this group purchased at farmers' markets, 53% were female, and 56% were from the Midwest. These unattached consumers were characterized by actively seeking campus/community involvement activities, being international, and living in on-campus housing.

Cluster 4, labeled "skeptic," made up 14% of the sample (178 students). The skeptic segment was the smallest group and included consumers who did not express high expectations in general. Consumers in this group scored the lowest on purchasing at farmers' markets, lacked an agricultural background, and reported being international or from out of the Midwest.

Table 1. Comparison of Demographic Characteristics for Four Consumer Segments (*N* =1,532)

	Committed			Farm-to-Fork			Unattached			Skeptic		
	Mean	SD		Mean	SD		Mean	SD		Mean	SD	
FRESHMEN	0.33	0.47		0.26	0.44		0.29	0.46		0.26	0.44	
SOPHOMORE	0.23	0.42		0.27	0.44		0.28	0.45		0.29	0.45	
JUNIOR	0.23	0.42		0.19	0.39		0.21	0.41		0.25	0.43	
SENIOR	0.21	0.41		0.29	0.45		0.22	0.42		0.21	0.41	
STORE	0.97	0.16		0.98	0.15		0.97	0.16		0.96	0.21	
FARMERSMKT	0.53	0.50	A	0.49	0.50	A	0.39	0.49	B	0.26	0.44	C
GROW	0.02	0.15		0.02	0.14		0.00	0.00		0.02	0.13	
AGBACKGROUND	0.24	0.43	BC	0.47	0.50	A	0.13	0.33	C	0.16	0.37	C
FEMALE	0.69	0.46	A	0.65	0.48	A	0.53	0.50	B	0.44	0.50	B
AGE	20.23	1.76		20.36	1.58		20.14	1.54		20.26	1.62	
INVOLVED	0.59	0.49	A	0.51	0.50	A	0.53	0.50	A	0.41	0.49	B
MIDWEST	0.62	0.49	BC	0.74	0.44	A	0.56	0.50	B	0.57	0.50	B
OUT-MIDWEST	0.31	0.46	AB	0.25	0.44	B	0.35	0.48	A	0.38	0.49	A
INTERNATIONAL	0.08	0.27	A	0.01	0.11	B	0.10	0.30	A	0.05	0.22	A
ONCAMPUS	0.53	0.50	AB	0.44	0.50	B	0.56	0.50	A	0.46	0.50	B
AGMAJOR	0.10	0.30	B	0.28	0.45	A	0.06	0.24	B	0.09	0.29	B
No. of obs.		426			336			333			178	
Market size (%)		33			27			26			14	

Note: The optimal number of clusters was identified using both objective (i.e., numerous clustering algorithm) and subjective information, With the exception of AGE, the mean for each variable is the percentage of respondents with that attribute. Any two different uppercase letters show statistically significant differences across consumer clusters at the *p* <0.1 level using Tukey's significant difference test.

The ordered logit provided the results of cluster membership among Millennials and Gen Z consumers regarding their values on food trends. Table 2 illustrates the marginal effects of the ordered probit for each cluster membership. The marginal effects provide the impacts of explanatory variables on consumer segments. Results suggest that demographics, purchasing behavior, and community involvement are major drivers of cluster membership.

Results suggest that cluster membership is driven by personal motives, particularly the desire to contribute to the local food system and support local communities. Specific drivers that increase consumer values for social and environmental food attributes included demographics, purchasing behavior, and perceptions. Shopping in local markets, gender, and community involvement were the most important factors driving the value of environmental and social food attributes. Our findings suggest increasing access to local foods and farmers' market patronage is likely to increase consumers' value of foods with local, organic, sustainable, and small family farm attributes. From a marketing standpoint, this information can be used by food marketers and growers to understand what Millennials and Gen Z consumers value and how they choose to spend

Table 2. Marginal Effects Results from Ordered Probit for Cluster Membership of Millennial and Gen Z Consumers

	Committed		Farm-to-Fork		Unattached		Skeptic	
	M.E.	SE	M.E.	SE	M.E.	SE	M.E.	SE
SOPHOMORE	−6.98**	3.41	−0.68	0.42	4.08**	1.99	3.59**	3.50
JUNIOR	−0.95	4.26	−0.22	0.28	2.29	2.47	1.87	35.20
SENIOR	−4.16	5.06	−0.24	0.35	2.42	2.94	1.98	41.50
STORE	−0.83	6.96	−0.08	0.70	0.49	4.08	0.43	90.50
FARMERSMKT	11.11***	2.34	1.12***	0.42	−6.51***	1.43	−5.72***	0.00
GROW	13.20	9.70	1.33	1.06	−7.74	5.70	−6.80	17.40
AGBACKGR	8.72***	2.68	0.88**	0.40	−5.11***	1.61	−4.49***	0.10
FEMALE	12.88***	2.35	1.30***	0.47	−7.55***	1.46	−6.63***	0.00
AGE	1.34	1.09	0.13	0.12	−0.78	0.64	−0.69***	21.90
INVOLVED	6.30	2.41	0.64**	0.31	−3.69***	1.43	−3.24	0.90
OUT-MIDWEST	−2.28	2.51	−0.27	0.33	1.34	1.48	1.21	37.30
INTERNTL	2.47	5.25	0.13	0.16	−1.43	3.03	−1.16	62.20
ONCAMPUS	1.00	2.82	0.10	0.29	−0.59	1.66	−0.52	72.30
AGMAJOR	−1.86	3.27	−0.19	0.33	1.09	1.92	0.96	57.00

Number of observations = 1,265; Prob > χ^2 = 0.00; Pseudo-R^2 = 0.09. Marginal effects are expressed in percentage points. Single, double, and triple asterisks (*, **, ***) indicate significance at the 10%, 5%, and 1% levels.

their money. Understanding what these young consumers value in terms of food attributes can help food marketers develop messages and strategies that build long-term loyalties. Developing the correct messages that appeal to this niche market can help food growers, processors, and retailers better position their business in a competitive environment.

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