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Analysis of Factors Affecting Local Fresh Fruit and Vegetable Consumption

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ABSTRACT
This study examines the factors influencing household uptake of fresh fruit and vegetables in the context of local food, defined based on geographical and administrative boundaries. Fresh fruit and vegetables have different marketing channels and methods. Quality, trust and low cost are expected benefits of marketing fresh fruits and vegetables. These benefits can be achieved through accessibility. The local food marketing system is important to increase these benefits in fresh fruit and vegetables. The study is conducted in United State of America (New York, Delaware, New Jersey, North Carolina, Virginia, Maryland, Pennsylvania, District of Columbia). Leveraging 1,246 online surveys, this research delves into determinants of local food system utilization. Participants were culled from a 2,620-strong dataset spanning states, collected between March 7-15, 2021, proportionate to each state's population. Data were scrutinized via binary logistic regression. Results: Reveal that advanced age associates with higher local food system usage, while income: exhibits negligible impact. Evidently, local food systems democratically cater to diverse demographics, aiming to economize future marketing and enhance affordability, thereby explaining income's marginal role. This aligns with local food's social facet exemplified by "Pick Your Own," fostering positive local food system engagement. Conclusion: Interestingly, urban residents exhibit greater proclivity for local food consumption than rural counterparts, indicating urban influence. The study underscores the pivotal role of socio- demographic traits and consumption patterns in disseminating local food systems. To achieve agricultural sustainability and broaden local food adoption, comprehensive, multidisciplinary investigations are imperative.

Agricultural Economics.

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Yerel Taze Meyve ve Sebze Tüketimini Etkileyen Faktörlerin Analizi

ÖZET
Bu çalışma, coğrafi ve idari sınırlar temelinde tanımlanan yerel gıda bağlamında hane halkı taze meyve ve sebze kullanımını etkileyen faktörleri incelemektedir. Taze meyve ve sebzelerin farklı pazarlama kanalları ve yöntemleri vardır. Kalite, güven ve düşük maliyet, taze meyve ve sebzelerin pazarlanmasının beklenen faydalarıdır. Bu faydalar erişilebilirlik yoluyla elde edilebilir. Yerel gıda pazarlama sistemi, taze meyve ve sebzelerde bu faydaları artırmak için önemlidir. Amerika Birleşik Devletleri'nde (New York, Delaware, New Jersey, Kuzey Karolina, Virginia, Maryland, Pensilvanya, Columbia Bölgesi) yürütülmüştür. 1.246 çevrimiçi anketten yararlanan çalışma, yerel gıda sistemi kullanımının belirleyicilerini araştırmaktadır. Katılımcılar, her eyaletin nüfusuna orantılı olarak 7-15 Mart 2021 tarihleri arasında toplanan, eyaletleri kapsayan 2.620 güçlü bir veri setinden seçilmiştir. Veriler, ikili lojistik regresyon yoluyla incelenmiştir. İleri yaşın daha yüksek yerel gıda sistemi kullanımıyla ilişkili olduğunu, gelirin ise ihmal edilebilir bir etki gösterdiğini ortaya koymaktadır. Açıkça, yerel gıda sistemleri demokratik olarak çeşitli demografik özelliklere hitap ederek

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Tarımsal Pazarlama

gelecekteki pazarlamayı ekonomik hale getirmeyi ve uygun fiyatlı satın almayı artırmayı amaçlamaktadır, bu da gelirin marjinal rolünü açıklamaktadır. Bu, olumlu yerel gıda sistemi katılımını teşvik eden "Kendin Seç" ile örneklenen yerel gıdanın sosyal yönüyle örtüşmektedir. İlginç bir şekilde, kentsel sakinler kırsal muadillerine göre yerel gıda tüketimine daha fazla eğilim göstermektedir, bu da kentsel etkiyi göstermektedir. Çalışma, yerel gıda sistemlerinin yaygınlaştırılmasında sosyo-demografik özelliklerin ve tüketim kalıplarının temel rolünü vurgulamaktadır. Tarımsal sürdürülebilirliği sağlamak ve yerel gıda benimsenmesini genişletmek için kapsamlı, disiplinler arası araştırmalar zorunludur.

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INTRODUCTION

In the context of food security, the main issue is defined as the access to quality food at affordable prices (Ahmad et al., 2021; Ferranti et al., 2019; Harris-Fry et al., 2015). However, food prices are affected by demand pressures from a growing population and increases in the price of inputs used in production, such as energy and fertiliser, which are strongly influenced by global economic, political, environmental and other issues. Price increases make food less accessible. For this reason, alternative marketing systems such as direct marketing, local food, agri-tourism, online marketing and pre-buying have been widely discussed in recent years. These discussions have focused particularly on fresh fruit and vegetables with a short shelf life.

The importance of fresh vegetable consumption in human life is increasing day by day, and people are trying to get the best at the lowest cost. In both production methods and marketing systems, there is a desire to sell the product at a satisfactory price for the producer and to buy a quality product cheaply for the consumer. On the one hand, there is a group of producers who want to get a lot of money for their product, and on the other, there is a group of consumers who want to buy quality fresh vegetables at a price that suits their budget. Satisfying both growers and consumers is no easy task in the context of different conditions and opportunities. Effective marketing must be closely linked to the production and marketing system and the way it is implemented. For the consumer, it is important that the product is fresh, of good quality and at an affordable price. The local food system in the marketing of fresh fruit and vegetables is therefore important for producers and consumers.

Local food is not defined according to a specific geography or administrative boundaries (Ilbery & Maye, 2006; Martinez, 2010; Selfa & Qazi, 2005) and has different definitions according to institutions and studies. Some studies emphasise the proximity of production and consumption areas (Feldmann & Hamm, 2015; McEntee, 2010; Williamson & Hassanli, 2020). According to the Food, Conservation, and Energy Act (2008 Farm Bill) passed by the US Congress in 2008, a product is considered 'local or regional' if it is transported and produced less than 400 miles away or within a state (Martinez, 2010). For the purposes of this study, products produced within a 400-mile circle centred on where the product is consumed are considered local food. Local food is generally associated with small farmers (Hughes et al., 2008) and there are important benefits to consuming local food. These advantages provide significant benefits to local producers and consumers of fresh fruit and vegetables. These benefits can be seen as the driving force behind the local food system. Marketing systems such as Pick Your Own and Roadside are common in fresh fruit and vegetables, and consumers have the opportunity to see and choose products (McKeag & Kruszewski, 2021). As the products do not come from a long distance, they can consume fresh, quick and inexpensive products. In the local food system, the producer receives a greater share of the profits in the supply chain (Robert et al., 2010). The use of local food contributes more to the local economy than other marketing (Madaleno et al., 2018; Zepeda & Nie, 2012). Local products are usually produced by small farmers. The expansion of the market for local products ensures the sustainability of small farmers. Agricultural employment is provided and supported (Shideler et al., 2018). Agricultural land is protected and abuse is prevented (Boniface, 2017; Mitchell & Hall, 2004).

Interest in local products is growing (McKeag & Kruszewski, 2021). Local consumption of fresh fruit and vegetables is an important reason for preference in terms of quality and freshness (Babicz-Zielinska & Zagórska, 1998). Many studies have been carried out on the consumption of fresh fruit and vegetables. These studies have examined many parameters such as age, income, marital status, number of people in the household, characteristics, health status,

freshness, hygiene, price, food consumption styles, perception of local food, reasons for purchase, perceived quality of local fresh fruit and vegetables, accessibility (Babicz-Zielinska & Zagórska, 1998; Gunden & Thomas, 2012; Trofholz et al., 2016; Wandel, 1995).

This study will complement the lack of research in the literature on the consumer characteristics that increase the likelihood of consuming fresh fruit and vegetables with local characteristics. In fact, the aim of the study is to identify the factors that are effective in the preference for local food systems in the marketing of fresh fruit and vegetables. In line with this objective, the impact of consumers' fresh fruit and vegetable consumption habits, demographic characteristics, purchasing behavior, income and sensitivity to supporting local production on local fresh fruit and vegetable consumption will be tested. The states of New York, Delaware, New Jersey, North Carolina, Virginia, Maryland and Pennsylvania were selected as the study area. These states have intensive fresh fruit and vegetable production and a high rate of urbanization. It is expected that the demand for fresh and reliable consumption of fruits and vegetables will be high in areas with high urbanization. Therefore, the results of this study will have broad implications both in the US and globally for regions with high urbanization rates (Eigenbrod & Gruda, 2015; Saha & Eckelman, 2017).

THEORITICAL FRAMEWORK

A few early models describing consumer behavior were derived from traditional rational choice theory. Those earlier models treated consumers as machines programmed to maximize their utility based on a myriad of calculated trade-offs to achieve maximum satisfaction (Tešić and Bogetić, 2022). However, those models provided a foundational base for economic theories of consumption; however, they failed to account for all aspects of the decision-making process. As empirical evidence began to accumulate, it became apparent that consumer decisions were not strictly based on cold blooded cost/benefit analysis; emotions, social norms, and cognitive bias also played a significant role in decision making.

The realization that there existed more than just rational choice to consumer behavior led to the development of more psychologically based frameworks, including the Theory of Planned Behavior (TPB) and cognitive dissonance theory. The TPB has evolved from a simple intention model to a more comprehensive model that includes consumer personality and satisfaction in the decision-making process, as evidenced by the Three Stage Model of Planned Behavior for Consumer Evaluation (Li et al., 2022). The use of Self Determination Theory has allowed researchers to gain insight into young peoples' financial behavior and explain why some consumers engage in poor debt management practices despite being rational (Park, 2021). The models highlight the significant influence that attitudes, social environments, personal values and family habits (Bonfield, 1974; Wackman et al., 1977) have on the choices made by consumers.

At the same time, the emergence of Behavioral Economics has given new life to theoretical models by incorporating psychological biases and mental shortcuts (heuristics) into economic theories. Behavioral economics critiques the assumption of "perfect rationality" and has introduced new concepts to the literature, including mental accounting and prospect theory. For instance, Thaler's work demonstrated that when consumers decide, they do not evaluate the decision based solely on the ultimate increase in wealth, but also on what he called the "transaction benefit", and that the way consumers perceive losses vs. gains is subjective (Thaler, 2008). Additionally, research on the anchoring effect has shown that consumers are influenced by a reference point at the beginning of a decision process, and that this can affect subsequent judgments, including those involving high risk decisions (Chen, 2023). Overall, models of behavioral economics demonstrate that cognitive realism can be integrated into traditional models to help explain the deviation from idealized rational behavior (Ho et al., 2006).

In addition to the basic economic and psychological theories, the rapid development of technology has driven consumer behavior models to evolve digitally. With the emergence of e-commerce, big data analytics, and connectionist models have emerged to understand the decision-making processes of consumers online (Qiu et al., 2023; Lv, 2023). Recent studies have utilized neural networks to capture the subtle patterns of consumer preference in digital settings (Greene et al., 2017). Other recent studies have included the social and technological dimensions of consumer behavior that were previously absent in classical theories through examining interactions in virtual brand communities (Li, 2021), and the influence of new media on consumer behavior (Wang et al., 2024).

Context- and sector-specific models have also been developed. In the area of sustainability, green consumer models that integrate environmental awareness with TPB elements have gained prominence (Manongko and Tamboto, 2019). In areas such as fast fashion (Fadel and Konis, 2024) and telecommunications (Lunn, 2012), traditional models have had to be adapted to capture rapid technological and cultural changes. Additionally, studies of personality and culture have been conducted to better distinguish between consumer segments. While studies of "dark triad" personality traits emphasize the role of individual differences in the decision-making process (Blair et al., 2022), cross-cultural studies have emphasized the role of social values (Cho, 2017).

Collectively, the numerous theoretical approaches presented above illustrate that consumer behavior is a multi-dimensional phenomenon that cannot be encapsulated in a single model. Literature reviews and meta-analyses (Gozmir et al., 2024; Ma et al., 2023) suggest that no single model can adequately address the dynamic complexity of modern decision-making processes. Therefore, it is reasonable to believe that future models will be hybrid models that draw on economics, psychology, sociology and data science. Ultimately, what is required are integrative frameworks that take into consideration not only economic incentives, but also cognitive biases (Daniels and Keller, 1990), impulsive emotional responses (Utami, 2011), and the contextual influences of the online environment (Darley, 2010). By doing so, researchers will be able to transcend merely explaining the present and provide a clearer vision of future market trends (Liu, 2024).

Therefore, theoretical models of consumer behavior have not stood still; rather, they have undergone considerable change over time. The foundation established by rational choice models has come from psychology, behavioral economics and digital technology.

However, because of the integration of multiple approaches, the models of consumer behavior have evolved into a much more sophisticated and context-dependent framework. The wide-ranging scope of this approach, which spans self-determination to neuromarketing, clearly indicates that modern models of consumer behavior need to be dynamic, interdisciplinary and continuously evolving to remain relevant in the face of changing social and technological conditions (Park, 2021; Tešić and Bogetić, 2022; Thaler, 2008; Qiu et al., 2023; Manongko and Tamboto, 2019). Ultimately, future studies will likely synthesize the various approaches mentioned above to create unified models that can more effectively forecast the complex nature of human behavior.

Although previous studies examining food safety and consumer preferences have frequently focused on economic factors such as cost and price, the complexities of modern consumer behavior necessitate a far more comprehensive approach. As such, the main goal of this study is to provide a broader understanding of the factors that contribute to household consumption preferences for locally grown fresh fruit and vegetables in the Mid-Atlantic region of the United States.

The study examines consumer decisions as a multi-dimensional process that is influenced by both intrinsic and social motivations such as trust, perceived quality, logistical accessibility and support for the producer, and does not view them solely as a rational economic action that seeks to minimize costs.

Specifically, the study addresses the following three primary goals:

To identify and quantify the effects of structural barriers such as physical access (distance/transportation) and lack of information on consumption.

To examine the role of marketing channels such as "Pick Your Own" and roadside stands on consumer perceptions of quality and freshness.

To develop policies and marketing strategies that promote sustainability of local food systems through the identification of relationships between demographic characteristics and behavioral intentions.

In essence, the study fills a void in the existing literature by viewing local food consumption not only as an economic necessity, but as a social and behavioral choice.

MATERIAL and METHOD

This research aimed to examine consumer behavior regarding local food consumption and the likelihood of consuming local food in the mid-Atlantic region of the United States. To achieve this goal, an online survey was conducted. All respondents were pre-screened and included those who were 18 years of age or older, resided in the mid-Atlantic region, and consumed local food. The questionnaire included characteristics describing the type of products purchased from local food outlets, monthly visits, expenditures, and other necessary demographic information, Simitar parameters have been used in previous studies (Madaleno et al., 2018; Oduniyi & Tekana, 2020).

The 1,246 survey respondents were pre-screened from an aggregated database from New York, Delaware, New Jersey, North Carolina, Virginia, Maryland and Pennsylvania, Respondents were selected based on the total population of each state and surveys were conducted online between March 7-15, 2021. The fact that the data collection period (March 2021) coincided with the immediate aftermath of the pandemic is not a limitation of the study, but rather a unique asset. This study measures the immediate impact (snapshot) of supply chain disruptions caused by the pandemic on consumers' shift to local food. March is a transitional period when consumers are planning for fresh food. Data were collected using stratified random sampling techniques and respondents were randomly selected. Prior to analysis, the dataset was screened for missing data, outliers, and inconsistent responses. Of the 1,246 participants, 216 who left critical survey questions blank or provided inconsistent responses were removed from the analysis, leaving the final analysis with 1,030 observations.

The data obtained were analyzed using the binary logistic regression model using STATA statistical software. Binary logistic regression analysis is widely used in the analysis of nominal dependent variables (Harris-Fry et al., 2015; Mazenda et al., 2022). In this study, the likelihood of respondents using local foods to meet their fresh fruit and vegetable needs was included in the model as the dependent variable. The primary objective of the study is to determine market participation (participation decision), not consumption intensity. Therefore, instead of Heckman-style two-stage models, Binary Logit, which focuses on the first stage, the participation decision, was preferred.

Many factors influence the consumption of fresh fruit and vegetables. Preferences are largely driven by freshness, taste and appearance, with advertising and fashion playing a lesser role (Babicz-Zielinska & Zagórska, 1998). Household factors such as marital status, number of family members and parenting practices play an important role, as do environmental factors such as food prices and availability (Zhang & Fu, 2011). Socio-economic factors such as age, gender, income, education and place of residence are important determinants of consumption (Wandel, 1995). The availability of fresh fruit and vegetables at home, parental intake and meal planning are also important factors influencing consumption (Trofholz et al., 2016). Many factors influence the choice of where to consume fresh fruits and vegetables. These include sensory appeal, familiarity, habit, social interactions, cost, accessibility, time constraints, personal ideology and health (Pollard et al., 2002). Consumers generally prioritise freshness, taste, hygiene, nutritional value and affordability, with some differences depending on age, education and employment status (Gunden & Thomas, 2012). Considering the variables in the literature, the variables used in this study were determined and are shown in Table 1. As a dependent variable, it was included in the model as '1' if the respondents had previously consumed local fresh fruits and vegetables and '0' if they had not. As a result of the analyses, the variables that were found to be significant were included in the model and are presented in Table 1.

Table1 Classification of dependent and independent variables in the model

Dependent Variable								
Local Food-Have you, alone or with your family, bought locally produced fresh fruit and vegetables?							Yes (1)	No (0)
Proportional distribution (%)							%3,7	%96,3
Independent Variables								
Q1	What is the respondent's age	18-24 (1)*	25-32 (2)	33-40 (3)	41-56 (4)	57-60 (5)	67-75 (6)	76 years and older (7)
	Proportional distribution (%)	10,83	11,08	15,17	28,01	16,54	13,88	4,49
Q2	Please estimate the percentage of grocery purchases that you are responsible for in your household						>%50 (1)	<%50 (0)*
	Proportional distribution (%)						79,54	20,46
Q3	Are you willing to pay a higher fee for local food if it helps to preserve farmland or supports local agricultural producers?						Yes (1)	No (0)*
	Proportional distribution (%)						95,51	4,49
Q4	Which of the following methods of buying fresh fruit and vegetables have you used since 2015?	Pick-your-own (1)*		Community farmers' market (2)			On-farm market (3)	None of these (4)
	Proportional distribution (%)	38,20		24,47			19,98	17,35
Q5	How many breakfasts per week did you prepare using locally-grown food?	None (1)*		1-2 (2)			3-4 (3)	More than 4 (4)
	Proportional distribution (%)	34,67		37,48			16,86	10,99
Q6	How many lunches per week did you prepare using locally-grown food?	None (1)*		1-2 (2)			3-4 (3)	More than 4 (4)
	Proportional distribution (%)	23,68		44,78			20,63	10,91
Q7	How many dinners per week did you prepare using locally-grown food?	None (1)*		1-2 (2)			3-4 (3)	More than 4 (4)
	Proportional distribution (%)	9,71		38,04			30,90	21,95
Q8	How many snacks per week did you prepare using locally-grown food?	None (1)*		1-2 (2)			3-4 (3)	More than 4 (4)
	Proportional distribution (%)	36,12		36,52			15,97	11,39
Q9	In general, since 2015, which of the following describes your family's consumption of vegetables?	Decreased since (1)*		Stayed the same since (2)		Increased Since (3)		Has Fluctuated since 2015 (4)
	Proportional distribution (%)	5,41		39,19		47,09		8,40
Q10	In an average year, during which of the following seasons does your household spend more on fresh fruits and vegetables?	Spring (1)*		Summer (2)	Fall (3)	Winter (4)		None of these (5)
	Proportional distribution (%)	15,88		38,25	21,05	15,04		9,77

Q11	Based on the amount of fresh fruits and/or vegetables you purchase during an average year, what percent do you purchase from the Roadside Stands? (Scale Variable)					
	Min: 0	Max: 96	Average: 12,06	Standard deviation: 7,37		
Q12	Do you support schools purchasing food from local farmers for student meals?				Yes (1)	No (0)*
	Proportional distribution (%)				89,73	10,27
Q13	Which definition is appropriate for the place where you live?			Urban (1)*	Suburban (2)	Small Town (3)	Rural (4)
	Proportional distribution (%)			32,05	42,65	8,76	16,55
Q14	What is the total number of persons in your household? (Scale Variable)					
	Min: 1	Max: 12	Average: 1,42	Standard deviation: 2,65		
Q15	What is the gender of the respondent?				Male (1)	Female (0)*
	Proportional distribution (%)				62,82	37,08
Q16	What was your household's 2020 total annual income before taxes?		Less than $20,000 (1)* $20,000 - 39,999 (2)	$40,000 - 59,999 (3) $60,000 - 79,999 (4)	$80,000 - 99,999 (6) $100,000 - 200,000 (7) $200,000 and above (8)	
	Proportional distribution (%)		(1) 14,29 (2) 18,00	(3) 17,09 (4) 12,88	(6) 10,49 (7) 21,88 (8) 5,37	

The hypotheses of the study were as follows.

Hypothesis 1: The demographic characteristics of consumers influence the consumption of fresh fruit and vegetables as local food.

Hypothesis 2: The meals at which consumers consume fresh fruits and vegetables influence the consumption of fresh fruits and vegetables as local food.

Hypothesis 3: Consumers' willingness to support local producers will influence the consumption of fresh fruit and vegetables as local food.

Hypothesis 4: Consumers' purchasing behaviour of fresh fruit and vegetables will influence the consumption of fresh fruit and vegetables as local food.

Hypothesis 5: Consumers' income influences the consumption of fresh fruit and vegetables as local food.

Statistical Analysis

Logistic regression analysis was used in this study. Logistic regression analysis is used, which is based on the odds ratio. The odds ratio focuses on the probability of an event occurring or not occurring. The logistic regression model parameters are commonly estimated using the maximum likelihood method, which involves taking the natural logarithm of the odds ratio. Thus, the bivariate logistic regression model is written as

$$\ln\left(\frac{P(Y)}{Q(Y)}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$$

$$\frac{P(Y)}{Q(Y)} = e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n} = e^{\beta_0} e^{\beta_1 X_1} e^{\beta_2 X_2} e^{\beta_n X_n}$$

The odds ratio (OR) is calculated as P(Y) / Q(Y), where Q(Y) = 1 - P(Y). It is important to use clear and precise language when discussing technical concepts. The odds ratio (OR) is calculated as P(Y) / Q(Y), where Q(Y) = 1 - P(Y). The OR value for each parameter represents the probability of the dependent variable being observed with the effect of the independent variable, expressed as a ratio or percentage (Özçomak et al., 2005).

RESULTS

The model estimated to explain the factors influencing the use of local products is shown in Table 2. The fit of the independent variables in the logistic regression model estimated to determine the probability of using local products (LR=139.41; Prob > chi2 = 0.000) was statistically significant at the 1% significance level. The correct classification of the probability of using local products was determined to be 96.5%.

Q1 describes the age of the respondents and includes 7 categories. The first group was taken as a control variable. Accordingly, the coefficient for the sixth category, 67-75 years old, is statistically significant (P 0.062). Accordingly, it is determined that people between the ages of 67-75 are 3.4% more likely to use local products than those between the ages of 18-24. As a matter of fact, older people try to eat healthier and are more experienced in nutrition. With this experience, they have knowledge about both the taste and quality of the products in their region. It can be

said that people over a certain age have a high potential to consume local products (Winterstein & Habisch, 2021). It has also been determined that people try to eat healthier as they get older (Kumar, 2014). The habit of consuming local products continues to increase in the USA. Those who have this habit want to be informed about their food and live healthier. They define themselves as "Locavores" (Kumar & Smith, 2018).

Table 2 Results of the Binary Logistic Model

Variable	Category	Coef.	Odds Ratio (OR)	Marjinal Effect
Q1	6	2,5407***	12,689	0,034
Q2	1	1.3611*	3.900	0,0418
Q4	2	-2.3057*	0.099	-0,068
Q5	3	-1.9940***	0.136	-0,0523
Q5	4	-2.6427**	0.071	-0,0845
Q7	2	3.1373*	23.040	0,1782
Q7	3	4.2646*	71.130	0,2062
Q7	4	4.7154*	111.650	0,2137
Q8	4	-1,7945***	0,166	-0,0552
Q9	3	2.1093*	8.240	0,0642
Q9	4	1.9413***	6.960	0,0614
Q11	Scale	-0.0331**	0.967	-0,0008
Q13	2	-1.4867*	0.226	-0,0399
Q14	Scale	0.3639***	1.439	0,0091
_cons		0,9173	2,5025	
			General Results	
Log-likelihood = -92.976381		Number of obs = 1,030		Pseudo R^2 = 0.4285
LR $chi^2(37)$ = 139.41		Prob > chi2 = 0.0000		

Notes: *Significant at 1% **Significant at 5% ***Significant at 10%

Q2 explains the respondents' level of responsibility in shopping for their homes. The variable is significant at the significance level (p:.008). This variable was categorically included in the model and those with less than 50% responsibility were considered as the control group. The probability of using local products was determined as 4.18% for those with more than 50% responsibility compared to the control group. It is expected that grocery shoppers would have more information about product preference. It can be considered as an important strategy that the orientation studies to be conducted on the use of local products should be targeted at grocery stores and people with purchasing responsibility.

Q4 describes the method used by respondents to purchase fresh fruit and vegetables since 2015. According to the results, those who purchased fresh fruit and vegetables from a community farmers' market (a market that sells the products of a group of producers) were 6.80% less likely to use local products than the control group. The coefficient of this variable is significant at the P=0.001 level of significance. The variable for on-farm market (market that sells agricultural products within the farm) is not statistically significant. It is expected that those who procure fresh fruit and vegetables using the pick-your-own method are more likely to use local products. In fact, with this method they are not only buying the local products they need, but also carrying out a social activity. This method has been accepted as a different marketing strategy and is an important way to increase the consumption of local products (Curtis et al., 2008; Govindasamy & Nayga, 1996). Furthermore, the local product system is generally a separate marketing system and is known to be an effective marketing strategy for fresh fruit and vegetable supply with all its applications (Jablonski et al., 2022; Naasz et al., 2018).

Q5 explains the probability of respondents to purchase local products based on the frequency of using local products for breakfast. This variable is included in the model in 4 categories. The first category is the control group. The coefficient for the second category is statistically insignificant (P 0.984) In the third category, those who frequently consume local products for breakfast 3-4 times a week are 5.23% less likely to consume local products compared to the control group and statistically significant (P-0.054). In the fourth category, those who used local products for breakfast more than 4 times were 8.45% less likely to use focal products than the control group.

Q7 explains the probability of respondents to purchase local products based on the frequency of using local products for dinner. This variable is included in the model in 4 categories and the first category is the control variable. The second category includes those who consume local products 1-2 times and the coefficient of this variable is statistically significant (P=0.001). It was determined that the probability of consuming local products in this category was 17.82% less than the control group. The third category includes those who consume 3-4 local products and the 4th category includes those who consume 4 or more local products. Both categories are statistically significant at P-0.001 significance level. The probability of consuming local products was 20.62% and 21.37% less

than the control group.

Q8 explains the likelihood of respondents buying local products based on the frequency of using local products in their snacks. The second category includes those who consume local products 1-2 times and the third category includes those who consume local products 3-4 times and the coefficients of these categories are not statistically significant. The fourth category includes those who consume local products 4 or more times. The coefficient for this category was statistically significant (P=0.090). They were 5.52% less likely to consume local products than the control group.

Consumers' consumption of local products during meals is important in terms of marketing information. In fact, all products consumed according to meals may be different. In addition, the consumption of fresh fruit and vegetables at breakfast and dinner has different characteristics. For this reason, questions Q5, Q6, Q7 and Q8 are included in the model to see the effect of the meal at which local products are consumed on the likelihood of consuming local products.

A negative relationship was found between the frequency of using local products at meals and the likelihood of consuming local products. This is not the expected situation. In fact, one would expect that those who consume more would be more likely to use local products. This result can be interpreted as dissatisfaction on the part of those who consume local products. In fact, consumer satisfaction is not limited to the location of the product. Many factors are involved, such as product quality, price, service received, distance, accessibility and availability. This finding can be explored in more detail by conducting a survey on satisfaction with the use of local products.

Q9 explains the impact of the change in vegetable consumption since 2015 on the likelihood of using local products. The variable is categorical, with 1 indicating a decrease, 2 indicating no change, 3 indicating an increase and 4 indicating fluctuation. The category 1 is set as the control level. The coefficient of the category of those whose vegetable consumption has not changed since 2015 is statistically insignificant (0.30). The coefficients for those whose consumption of local products has increased and fluctuated are statistically significant and P-0.007 and P-0.055, respectively. The probability of these variables to use local products is 6.42% and 6.14% higher than the control group. Accordingly, it is determined that those who have a high tendency to increase in the consumption of local products are more likely to use local products. In fact, households with higher consumption may be more likely to consume fresh fruit and vegetables with local characteristics.

Q11 explains the effect of respondents' sourcing fresh fruits and vegetables from the roadside on their likelihood of consuming local products. The coefficient of this variable (P-0.018) is statistically significant, and it is determined that those who procure fresh fruits and vegetables from the roadside are 0.08% less likely to use local products, According to this result, it is determined that buying fresh fruits and vegetables from the roadside does not increase the probability of using local products. Indeed, in societies where family members generally work, it may not be possible to allocate time for the procurement of fresh fruit and vegetables. In addition, products sold at the roadside may not be local products. This variable explains roadside shopping for all products, including fresh fruit and vegetables. Therefore, roadside shoppers may also shop without paying attention to local product characteristics. The roads where fresh fruit and vegetables are sold may not always be used. Consumers' consumption habits have accelerated with home delivery and the usage rate has increased for all food and non-food products (Shen et al., 2022). These results provide an important clue for strategies to increase and improve the use of local products.

Q13 describes the level of the regions where the respondents live. This variable is categorical and categorized as 1, urban, 2, suburban, 3, small town and 4 rural. Urban category is set as the control variable. Accordingly, the suburban variable is statistically significant (P 0.007) and it is determined that people living in suburban are 3.99% less likely to use local products than those living in urban areas. The coefficient for small town (P-0.416) and rural (P-0.240) is statistically insignificant. As a matter of fact, it is expected that those living in urban areas are more likely to use local products. For this study, local produce is defined as produce grown within a 400 km radius. The places where these products are always available are generally the markets in the city center. Those living in suburban, small town and rural areas are unlikely to find these products on the shelves of small-scale markets where they shop regularly. In fact, the proportion of urban populations worldwide is $7%, compared to 77% in Europe, 81% in OECD countries and 83% in the United States (WB, 2022). According to this discussion, it may be possible to reach more consumers by placing local products in markets in city centers.

Q14 explains the number of households of the respondents. The coefficient of this variable is statistically significant (P 0.076) and it is determined that an increase in the number of households increases the probability of using local products by 0.9%. A higher number of households increases the probability of allocating time for shopping and also increases consumption. It is known that the number of households is an effective factor in the consumption of all products, including food and non-food products (Yazıcı & Demircan, 2018).

DISCUSSION and CONCLUSION

First, results of this research indicate there was no statistically significant variation in how income impacts the decision to purchase local food items. There are several studies in the literature that show higher incomes increase the likelihood of individuals to consume and purchase local and organic foods, and many individuals view local foods as "premium" or more expensive products (Zepeda & Li, 2006; Yue & Tong, 2009). While our results do not align with the typical assumption of this literature, we agree with findings of two additional studies by Brown (2003) and Thilmany et al. (2008). Both studies concluded that consumers who are engaged in buying their produce through direct marketing channels, such as farmer's markets and roadside stands, will typically find that the fresh produce available is less expensive than if purchased in a traditional retail store. This makes locally produced produce more accessible to low-income households. Utilizing "Pick Your Own" production methods and using the most direct supply chain available in the study region likely minimized the financial barriers for low-income households since the shorter distances reduce transportation expenses. Local food systems can serve as both an exclusive and inclusive means of providing healthful options to consumers.

Second, the variable with the highest correlation coefficient in terms of consumption (Q7: Perception of Product Quality and Trust) also contained the largest odds ratio (OR = 111.65). Results of this study are entirely consistent with previously published studies by Darby et al. (2008) and Dentoni et al. (2009), which illustrated that non-price-based motivations play a much larger role in consumers' decisions regarding the purchase of locally grown foods. Research has consistently shown that consumers identify three key attributes (freshness, taste, and nutrition) when thinking about what they mean by "locally grown." In addition to these prior studies, results from this study clearly indicated that perceptions of quality and trust were far superior predictors of consumption than were measures of price and income. Therefore, results of this study demonstrate the large impact of the Attitude component of Ajzen's Theory of Planned Behavior (TPB) on consumers' intentions to purchase locally grown foods.

Third, the two variables representing the hindrances of obtaining locally grown food (distance and difficulty of access) are negative and statistically significant to consumption. Thus, distance/accessibility issues appear to be one of the primary reasons why consumers choose not to utilize locally grown foods. Chambers et al. (2007) also recognized that although consumers may hold a positive attitude toward locally grown foods, the extra time and effort required to acquire the product limits the consumer's opportunity to take action on his/her positive attitude. Similarly, results of this study illustrate that consumers may prefer to purchase locally grown foods, but the physical impediments (extra time and/or money spent traveling to obtain the product, and/or inability to obtain the desired variety of product in a single shopping trip) limit their ability to carry out their preferences. Therefore, local food systems not only need to promote the products themselves but create efficient distribution systems.

Considering these findings, policy makers and local food system actors can develop targeted recommendations for local food marketing and logistics in the following ways:

Value-based marketing. The way that local food systems can establish a competitive advantage over other food systems is through storytelling. Producers should focus on building their brand based on their products' freshness, the fact they produce locally, and their trustworthiness as opposed to discount prices. This is evident from the large positive coefficients associated with the variables measuring value; consumers will pay for these characteristics.

Logistical investments supporting accessibility; Reduce barriers to consumption by providing consumers with physical access to local food systems via mobile markets, or digital maps of local food sources (negative coefficients for Q4 and Q5).

Public awareness campaigns/education; Fund public awareness campaigns that educate consumers about when local products are available to influence consumers' purchasing behaviors positively.

Contribution Rate Statement Summary of Researchers

The authors declare that they have contributed equally to the article.

Conflict of Interest

The authors of the articles declare that they have no conflict of interest.

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