Survey Design and Implementation Team Project

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We are Green Island Grocery, an upscale grocery store chain operating in the greater Providence

area in the state of Rhode Island. We target a customer segment that values high quality food

products and a distinctive customer experience. The grocery industry is simultaneously

consolidating and differentiating, and we face increased competition from national grocery

enterprises, regional grocers, and specialty stores that try to copy elements of our presentation

and customer experience. To remain competitive, we must further differentiate ourselves from

our competitors.

Survey Objective

Our objective is to better understand what store and product attributes appeal most to our

customer base. Survey responses will help us formulate strategic and tactical plans aimed at: (a)

retaining our current customers; (b) expanding our share of wallet with current customers; and

(c) driving infrequent customers to shop with us more often.

Population of Interest

Our current customer base comprises the population of interest to us. We operate a

customer relationship management (CRM) system that contains demographic, email contact,

loyalty program usage data, point of sale (POS) transaction records and other information about

our customers. From that system, we know that we have 180,000 distinct customers (individuals

that we can identify). Because we believe our target market segment is very distinct, we think

our survey objectives are best served by trying to understand our own customers instead of

surveying the general population of the marketplace.

Sampling Frame

Our CRM system can explicitly identify frequent and infrequent shoppers in our stores

(subsets of our total customer base). We define frequent shoppers as those who buy something in

one of our stores at least once per week, and infrequent shoppers as those who buy something in

one of our stores two to three times per month. Our database indicates that frequent and

infrequent shoppers comprise 78% and 16% of our total customer base, respectively (94% of the

total). This composition is consistent with in-store grocery shopping frequency observed

nationwide in the U.S. (Statista, n.d.). The remaining 6% of our customers are irregular or

nonrecurring shoppers. Therefore, we have 169,200 distinct shoppers in our sampling frame

(180,000 x .94).

Sample Strategy and Design

Considering the resources available and the size of our sampling frame, we decided to

draw a sample rather than attempt a census. As noted, 78% of our customers are frequent

shoppers and 16% are infrequent shoppers. We believe these represent distinct subsegments of

our sampling frame. We know from our CRM system and other sources that our customers are

relatively homogeneous with respect to other demographic variables, which is consistent with

our limited geographic footprint. Therefore, we do not believe that further segmenting our

sampling frame by other demographic characteristics (age, gender, income, etc.) will provide the

type of insights we are seeking to gain from this research.

We will apply simple random sampling to select sample units. We evaluated whether the

relatively small percentage of infrequent shoppers to the total would result in the

underrepresentation of that group, as there is concern that a small sample size can lead to

unstable results (De Beuckelaer & Wagner, 2012). In our sampling frame, we see that frequent

shoppers comprise 78% of all customers, or 140,400 individuals (180,000 x .78), while

infrequent shoppers comprise 28,800 individuals (180,000 x .16). Therefore, frequent shoppers

comprise 83% of our sampling frame (140,400 / 169,200) and infrequent shoppers make up 17%

(28,800 / 169,200). Based on the number of individuals in each subgroup, we conclude that we

have a sufficiently large sampling frame to ensure representation from both subgroups in a simple random sample.

Calculating the Sample Size

We will apply a standard formula to determine our required sample size (where n_0 is the sample size before considering the finite population correction factor):

$$n_0 = Z^2 * p (1 - p) / e^2.$$

Application of this formula is appropriate with a simple random sampling methodology (Williams, 1999). For our survey, we desire a 95% confidence level, which corresponds to a Z score of 1.96. Also, we target a 5% margin of error (e). We are uncertain of the population proportion, so we will use a factor of .5 for conservatism (p). With this formula, we obtain sample size n_0 as follows:

$$n_0 = 1.96^2 * .5 * (1 - .5) / .05^2.$$

$$n_0 = 384.16 \text{ (rounded to 385)}.$$

Because we have a sampling frame available, we will create a simple probability sample through a random number process. This will give each individual an equal chance to be selected, thus eliminating systematic bias in selection (Watt & van den Berg, 1995).

Discussion of Survey and Data Collection Method

Recent research suggests that retail customers are becoming fatigued by large volumes of survey requests, resulting in reduced response rates (Dishman, 2014). In light of this, we evaluated a number of collection methods, including in-store interviews, telephone, and email.

We believe our customer base may be receptive to personal in-store interviews. However, in-store interviews based on foot traffic would amount to a form of a convenience sample and would not provide us with the level of validity in survey results necessary to help drive business decisions.

Telephone interviews, conducted by trained interviewers, might result in more complete and consistent information collection versus surveys via email or other self-administered methods (Groves, et al., 2009). However, telephone surveys generally require trained, expert interviewers, and are often executed from a central call center (Sellers, 2000). These requirements would place cost burdens on us that we are not willing to incur.

Email surveys present special challenges, such as the need for accurate email addresses (Groves, et al., 2009). Also, email surveys may result in poor response data because of skipped questions, respondent input errors, or similar issues (Sellers, 2000). However, we believe our CRM database contains high quality email contact information, and it indicates that 99% of our frequent and infrequent shoppers belong to our loyalty program, which requires a valid email address. Also, our customer base is accustomed to receiving our outreach via email. Finally, various societal level factors, such as social cohesion, may favor the use of an email survey (Keusch, 2015).

Considering the above factors, we believe email outreach is the best way to conduct our survey. We will distribute a unique link that can be accessed by only one I.P. address, and we will control the interval during which the survey is open (15 days). We will ask respondents to provide responses in a variety of formats, including free form text. We recognize that embedded email surveys (where the survey is part of the email itself, rather than attached as a link) may yield a higher response rate (Dommeyer & Moriarty, 2000). However, our desire for the control described above necessitates an attached survey link. Finally, because our existing email outreach processes allow customers to opt-out of communications, we believe can execute an email survey in compliance with applicable consumer privacy regulations.

Although there is no broad consensus on response rates for email surveys, a recent study indicates that we can expect a response rate of 40% (Loomis & Paterson, 2018). We will

encourage responses by offering an incentive (a $10 in-store coupon), framing the survey as an appeal for help in improving service, sending a reminder notice, and orchestrating survey timing to avoid conflict with other communications (Keusch, 2015). For conservatism, we will assume a response rate of 30%. This will require a sample of 385 / .30 = 1,284 (rounded). This larger sample also addresses possible concerns that we ignored the finite population correction factor when we computed n_0 (Kvanli, Fowler, & Foster, 1993).

Proposed Methods of Data Analysis

Our survey, in Appendix A, contains four multiple choice questions and six preference ranking questions. These questions enable coding of responses as integers to facilitate analysis, and we made these questions mandatory to prevent incomplete data. We have one optional free form text question to gather additional insights. We will use a standard word cloud program to facilitate analysis and evaluation of text responses. After the survey closes, we will determine if our desired sample size is met. If not, then we will consider sending additional survey invitations. We will also review response data to evaluate the rate of survey abandonment (i.e., starting, but not finishing the survey). Our knowledge of our customer base will enable both a qualitative and quantitative review of responses. We will review responses to identify potential outlier conditions (for example, if a large number of respondents indicate they have large numbers of infants in their households). For each question with multiple choice or drop downs we will calculate sample proportions overall. For questions with ratings, we plan to calculate the sample proportions of each rating for each choice and calculate average score of the rating, along with the standard error.

Possible Sources of Error

Our decision not to survey irregular and nonrecurring shoppers creates a potential coverage error (Groves, et al., 2009). However, irregular and nonrecurring shoppers comprise

only 6% of our customers. Also, by their very nature, these shoppers likely do not represent our

target market segment and are therefore not relevant to our objectives. Further, about 1% of

frequent and infrequent customers do not have loyalty memberships, but we do not feel this is a

large enough number to impact results. It is possible that frequent shoppers will have a different

propensity to respond to our survey than infrequent shoppers, which could create response bias.

To address this, we identified two variables that exist for all members of the population,

including the average transaction size and total spend over the past 75 days. We will review

response rates to determine if we need to weight responses based on these variables to adjust for

bias or send out additional survey invitations.

Conclusion and Contribution to Management

We believe we must augment our in-store and other service attributes in ways that are

congruent with evolving customer preferences, and our survey questions focus on potential

investment areas. Of particular interest are in-store services (such as cooking classes) and

ancillary services (such as home delivery). Some of these attributes exist in our stores today,

while others may be new to us or the industry as a whole, but may resonate with our customers,

such as robotic shopping carts (Reda, 2016). Finally, given the nature of our customer base

(highly loyal and upscale), we believe this survey can serve as an initial step in the creation of a

proprietary "insight community." Such a community could consist of store management,

executives, customers, employees, suppliers and other stakeholders. The intent is to form a

collective feedback apparatus to provide ongoing insights into the marketplace beyond the reach

of a focused survey (Milbrath, n.d.). While customer surveys will continue as an important part

of our market research, we believe an insight community presents further opportunity for us to

leverage our position in the community, our data resources (our CRM system), and our

knowledge of our customer base to improve our competitive position.

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Appendix A

Retail Grocery Store Attribute Survey

[Introduction: The text below will appear in the email distributed to survey respondents.]

To our customers:

As a member of the Green Island Grocery community, we appreciate your partnership in brining high quality food products to the Providence area. We're constantly working to meet and exceed your expectations by bringing quality products and new features into our stores. We'd like to invite you to take part in a brief survey to help us better understand your grocery needs and shopping preferences. The survey takes about six minutes to complete and it will help us make decisions about how to configure our stores. As a thank you, we would like to offer you a $10 in-store coupon that you can use on any purchases you make.

[Actual survey follows: Activated by a unique link attached to the survey invitation email]

Part I. Please tell us about yourself (all responses are anonymous, and we use them in aggregate, not individually).

1. How many people live in your household including you? [Input data]

Adults (over age 18)   _____

Teenagers (ages 13 to 17)   _____

Children (ages 5 to 12)   _____

Infants / Preschool (under 5) _____

2. Overall, how frequently do you shop at any grocery store for any reason? [Drop down]

a)   At least once per week

b)   No more than two or three times per month

c)   Once a month

d)   I'm not sure

3. What is your favorite way to shop for groceries? [Drop down]

a)   In-store

b)   Online order, home delivery

c)   Online order, in-store pick-up

d)   No preference / I use all equally

4. Do you use a shopping list? [Drop down]

a)   I always follow a shopping list

b)   I sometimes follow a list

c)   Sometimes I buy things I did not plan to purchase initially

d)   My priority is freshness & variety, a list doesn't matter

Part II. Please tell us about your in-store and product preferences. [Input data]

5.   **Please rank the importance of each of these factors to you in choosing a grocery store. Please input a ranking based on your preferences (1=Most Important; 5=Least Important).**

_____ Availability of foods I can't get anywhere else (specialized produce, gourmet ingredients or locally produced items)
_____ Availability of nonfood merchandise (cleaning supplies, cosmetics, personal care products)
_____ Convenient store hours (weekends, holidays and late night)
_____ Seasonal promotions and sales on selected items
_____ Store appearance and friendly staff

6.   **Please rank the importance of each of these factors to you in choosing products. Please input a ranking based on your preferences (1=Most Important; 5=Least Important).**

_____ Appearance of the items
_____ Certified organic or environmentally conscious
_____ Freshness of the items
_____ Labelling (clear indication of all ingredients)
_____ Presentation (easy to find what I want)

Please help us prioritize our food selections, in-store services and other services. Please input a ranking based on your preferences (1=Most Important; 5=Least Important).

7.   Food Products:

_____ Ready to carry out (hot foods, soup and salad bar)
_____ Ready to cook (pre-packaged organic meals using local ingredients)
_____ Meat product selection (grass-fed beef, free range chicken and hormone free pork)
_____ Seafood selection (specialty lobster, fresh caught fish and other items)
_____ Specialty wine and cheese shop

8.   In-store services:

_____ Cooking demonstrations, food & wine pairings, and other workshops
_____ Nutrition guidance for local products, including easy to understand labels on all goods
_____ Seasonal sales and alerts about fresh product arrivals
_____ Self-checkout / automated kiosks
_____ Wine and beer tastings and other seasonal food tastings

9.   Other features:

_____ In-store/online specialists to answer nutrition, food preparation, and other questions.
_____ In-store restaurants/eating areas.
_____ Personal shopper (prepare a shopping list, give it to one of our team members who shop for you and then deliver the food right to your doorstep).
_____ Robotic shopping carts (shop yourself, aided by a robotic shopping cart that includes a touchscreen that acts as a shopping dashboard. Make payments through the dashboard and find aisle shortcuts for faster shopping).
_____ Valet parking and loading assistance.

10.   Please express your overall satisfaction rating with Green Island Grocery in the menu below (1= Highly satisfied, 5 = Highly dissatisfied). [Selection]

Highly satisfied	Somewhat satisfied	Neither satisfied or dissatisfied	Somewhat dissatisfied	Highly dissatisfied
1	2	3	4	5

11.   Please help us understand your answers to the above questions or give us any other feedback you think is important.

[Free form text, up to 500 words; If there are no comments, the respondent clicks on "Done".]

[Completion logic: Once the respondent has completed the survey, the following message appears, the survey response is submitted and the link is deactivated. The coupon is embedded in the email as it is an unconditional incentive.]

We're glad you participated in our survey. Your voice is very important in helping us decide how to keep our stores relevant to your needs. Also, please feel free to see any of our store managers if you have additional ideas. In the meantime, please take advantage of the attached $10 in-store coupon.

      Thanks and happy shopping!