# EXAMINING LOCAL CONSUMER INTEREST IN SELLING CAL POLY HONEY ONLINE

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# ABSTRACT

This study was undertaken to determine whether Cal Poly affiliated people were interested in purchasing Cal Poly honey online through its own web store. In addition to determining the level of interest, the target market was examined to explore how to market Cal Poly honey more effectively. The underlying objective of the project was to determine if a Cal Poly honey web store would be profitable as a honey marketing outlet in addition to current sales at stores around campus.

A survey was administered to Cal Poly affiliated people online using SurveyMonkey.com over a nine-day time period. The survey focused on questions that gave insight into various aspects of consumer behavior and preferences towards Cal poly honey. The results from the twenty-three question survey were analyzed using a series of statistical tests including frequencies and chi-squared tests. The results of the tests provided significant information about consumer tastes and preferences.

Of the entire sample, a target market of twenty respondents, or 20% of the population, was identified as respondents who indicated more than a slight possibility that they or their families would buy Cal Poly honey online.

The recommendations made were based upon the statistical findings. The recommendations include possibly lowering the price of Cal Poly honey to increase sales and revenues, additional honey production to increase profits, as well as possible marketing strategies that could potentially increase awareness and potential sales of Cal Poly honey.

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# Chapter 1

## INTRODUCTION

There are several agricultural products produced on the Cal Poly campus in association with the "learning by doing" practice of students. Although some of these products are sold through the bookstore and a few other retail outlets, they have very limited distribution and exposure to the campus and also to the outside world (i.e., off campus, or neighboring cities). At present, the El Corral bookstore only carries small quantities of agricultural department produced products such as honey, jam, and chocolate.

The product pertinent to this project is Cal Poly honey, which is produced by bees that live on campus near the lemon orchard. There is a beekeeping class that is offered at Cal Poly taught by Scott Jeffreys that teaches students the basics of beekeeping in California. The students help make the honey by tending to the bees and create the right atmosphere so that the bees can thrive, thus producing the maximum amount of honey. Each Fall and Spring, the bees produce anywhere from 500 to 1500 bottles of honey, depending on the circumstances. This number could potentially increase if Cal Poly honey had its own web store. Such a web store could be a good vehicle for attracting attention and increasing exposure and awareness of Cal Poly honey, both on campus among students, teachers and employees, as well as off campus for alumni, parents, and grocery stores around San Luis Obispo.

Cal Poly honey is marketed through the on-campus stores such as the Campus Market, the Poly Plant Shop, the El Corral Bookstore, and the Village Market. Displays show the honey in an attractive fashion to catch people's attention. The Cal Poly Honey is sold to these retailers for a wholesale price of $3.25, and the markets in turn double that price and sell the honey bottles for $6.50, or a 100% markup. For every dollar of wholesale revenues from honey, half goes to the Fruit Science Department and the other half is split between all of the Beekeeping Enterprise Project students at the end of the year. The markets that purchase the honey keep the entire retail margin of $3.25 a bottle. The markets and bookstore purchase the honey directly from one of the Beekeeping Enterprise Project students who deliver the cases to the various sales locations around campus.

## Statement of the Problem

Marketing Cal Poly honey through a website can increase awareness of the availability of the product, the sales volume and the net income from honey production.

## Hypothesis

A Cal Poly honey web store presence will create at least a 10% increase in the quantity of honey sales annually, with a corresponding increase in the value of sales.

## Objectives of the Study

1. To assess the target market for Cal Poly honey
2. To assess the agricultural production interest in making honey available for sale via an internet web store
3. To determine the likely increase in sales of honey due to a web presence in addition to the current sales

## Justification of the Study

The benefits from a Cal Poly honey web store could greatly increase sales and profit margins for the Fruit Science Department, as well as the different markets around campus. Increasing production could create more openings for classes such as Beekeeping to keep the honey collection process flowing, which would lighten amount of work that Mr. Jeffreys' has to do. Students would benefit by having more honey available more often, and also they would have the option of ordering honey online. The web store will also cause an increase in the awareness of Cal Poly honey around San Luis Obispo as well as other areas nearby.

# Chapter 2

## REVIEW OF THE LITERATURE

The review of literature will focus on information relevant to understanding implications consumer attitudes may have on sales forecasting methods based on data from a consumer survey. In addition, the review of literature discusses how e-commerce is one of the most important factors in the business world, which can help determine the possibility of selling Cal Poly honey online. The review of literature also discusses the factors affecting online shopping, what makes consumers buy from the Internet, and how this affects the sales of their products and services. Behavioral control and intentions, as well as easy searching of products online, significantly influence online shopping behavior. Then researchers use these purchase intentions to forecast profits and sales accordingly.

E-commerce is one of the most important factors in today's business world. It leverages digital information technology by substituting computers, the Internet, and the World Wide Web for human labor and for physical capital employed in exchange for activities. This new way of buying and selling on the Internet is currently spreading into the agricultural sectors of all wired countries. Entrepreneurship is the notion that provides order to variety and change in e-commerce markets. Commercial websites can be expensive, and most farmers do not maintain their own website because of the time and money involved. Mueller (2001) found that entrepreneurial farmers who use e-commerce for their products tended to have more sales than farmers who did not. The use of e-commerce will usually cause a significant increase in sales for

agricultural products such as honey, which is why recently more farmers are starting to use websites for the products they sell.

Butler and Peppard (1998) investigated the factors affecting online shopping. Their model explained the impact of different factors on online shopping intentions and behavior is developed based on the Theory of Planned Behavior. Data were collected from 705 consumers, which indicated that subjective norms, attitude, and beliefs concerning the consequences of online shopping have significant effects on consumer subjective norms, attitude, and beliefs (Paradi 1999). This suggests that in order for a Cal Poly honey web store to be successful, it must be geared towards the people that live in San Luis Obispo because their subjective thoughts will determine the profitability of honey sales.

Bellman (2000) had two primary objectives; the first was to use current behavioral theories in the elaboration of a model that can identify key factors influencing purchasing on the web. Such a model should also explain the relationship between individuals' intentions to buy from the web and the actual behavior of purchasing online. The second objective is to conduct a longitudinal study to empirically test the validity of the proposed model (Bellman et. al 2000). Bellman found that these two objectives would enhance the understanding of consumer behavior on the Web and would lead to valuable implications to marketers and managers on how to develop effective strategies to win the battles of cyber competition. This could be useful information in case the honey web store had competition.

Yan and Paradi (1999) found that behavioral control and intentions significantly influence online shopping behavior. The results provide strong support for the positive effects of personal innovativeness on attitude and intentions to shop online. This finding would lead to the idea that many people want to, and would rather, buy online which supports the idea that a Cal Poly honey website could be profitable.

Anderson (1999) states that easy searching for products (such as honey) online is one of the most important factors for an online store or business to consider. A study was conducted that includes consumer search habits among multiple competing firms that match their preferences at a reasonable price. The researchers focused on how easier search, possibly due to the adoption of search-facilitating technologies such as the Internet, influences equilibrium prices, firm profits, and consumer welfare. Conventional wisdom suggests that easier search creates a competition-intensifying effect that puts pressure on firms to lower their prices and reduce assortments. It was demonstrated that search also exhibits a market-expansion effect that encourages firms to expand their assortment. Easier search means that each firm is searched by more customers. Anderson (1999) found that market-expansion can dominate the competition-intensifying effect potentially leading to higher prices, broader assortments, more profits, and expanded welfare.

Many reports have discussed the use of electronic commerce sites by agricultural operations in the United States recently. The Internet is taking root within the agriculture community, as vendor's plant the seeds for e-commerce sites which, even as saplings, provide farmers with deep knowledge bases, efficient communications and most importantly the potential for lower product costs. Mottl (1999) suggests that web access among growers has doubled in the past two years,

as 29% of US farms are now hooked into the Internet. DirectAg.com is one of less than a handful of sites catering to producers, but it is the first to offer full e-commerce transactional capabilities, as well as extensive industry news and content.

The article *Marketing Wine on the Web* by Stricker (2007) presents the results of a survey of the practice e-commerce by wineries in California. A comparison of the e-commerce practices by wineries from Australia and Germany is also conducted. Stricker (2007) discusses Web site diffusion and use for wine sales and tourism promotion, the importance of Web usability and maintenance, the problem posed by transport costs and the opportunities for wineries.

The term marketing implies the single goal of profit. It is categorized into two, direct marketing and indirect marketing and there is a significant line of difference between the two. Cooper (2009) explains how direct marketing is basically business from manufacturer to consumer without the involvement of other actors in the supply chain. This is generally done by providing information and distributing to the consumer directly, so he can know about the products. The use of mass media advertisements is very limited and whatever little use is made includes only the demonstration of their products with call back numbers. The article presents the advantages and disadvantages of direct marketing to customers.

Marketing managers routinely use purchase intentions to predict sales. Morwitz (1997) identified the factors associated with an increased or decreased correlation between purchase intentions and actual purchasing. Morwitz (1997) examined data from a wide range of different settings that

reflect the real world diversity in how intentions studies are conducted. The results indicate that intentions are more correlated with purchases: 1) for existing products than for new ones; 2) for durable goods than for non-durable goods; 3) for short than for long time horizons; 4) when respondents are asked to provide intentions to purchase specific brands or models than when they are asked to provide intentions to buy at the product category level; 5) when purchases are measured in terms of trial rates than when they are measured in terms of total market sales; and 6) when purchase intentions are collected in a comparative mode than when they are collected monadically.

Purchase intentions are routinely used to forecast sales of existing products and services. While past studies have shown that intentions are predictive of sales, they have only examined the absolute accuracy of intentions, not their accuracy relative to other forecasting methods. For example, no research has been able to demonstrate that intentions-based forecasts can improve upon a simple extrapolation of past sales trends. Armstrong (2000) examined the relative accuracy of four methods that forecast sales from intentions. He tested these methods using four data sets involving different products and time horizons; one of French automobile sales, two of US automobile sales, and one of US wireless services. For all four products and time horizons, each of the four intentions-based forecasting methods was more accurate than an extrapolation of past sales. Combinations of these forecasting methods using equal weights lead to even greater accuracy, with error rates about one-third lower than extrapolations of past sales. Thus, it appears that purchase intentions can provide better forecasts than a simple extrapolation of past sales trends. While the evidence from the current study contradicts the findings of an earlier study, the

consistency of the results in our study suggest that intentions are a valuable input to sales forecasts.

Sellers are embracing technology-mediated sales communication tools such as videoconferencing systems, cellular phones, web sites, and electronic data interchange (EDI) systems in an attempt to control selling costs while maintaining the personal touch. What is unclear at this point, says MacDonald (2001), is if investment in communication technology actually pays dividends for industrial suppliers. This research explores the topic by examining the effects of buyer satisfaction with the adoption of technology-mediated communication (STMC) on channel partner relationships. STMC is found to have significant, positive, direct effects on future intentions (FI). Smith (2001) discovered that these effects are found to be partially mediated by trust and commitment.

# Chapter 3

# METHODOLOGY

## Procedures for Data Collection

Online businesses are the fastest growing industry in today's world, so it is relevant evaluate whether Cal Poly could benefit from a website for the honey that it produces. To do this, an assessment of the agricultural production for making honey available for sale via the Internet is a necessary step. This assessment was done in the form of an online survey using the online engine SurveyMonkey.com. The survey was posted on Facebook groups of Cal Poly affiliated persons, which is the target market pertaining to this project. It basically means any person with some connection to Cal Poly, who may or may not be willing to buy Cal Poly honey. The population consisted of a purposive sample (those willing to take the survey) rather than a random sample. This is an approach used by many organizations to assess the opinions and preferences of a random selection of people. The most important questions were focused on potential buyers of Cal Poly honey, which most likely will be Cal Poly faculty, students and their families. The option to post the survey online instead of other options was chosen to generate more responses in a shorter amount of time and to allow the participants to take the survey whenever it fits into their schedule.

A total of 100 surveys were collected online through SurveyMonkey.com using Facebook. A sample size of 100 was chosen to insure a large enough sample size to make accurate inferences

about the target population. The number was also chosen because it was a small enough sample size to obtain for the given time period with the available resources.

The information was gathered to determine whether persons affiliated with Cal Poly were interested enough in honey to justify more production, along with higher profits. The survey was administered to students, faculty, and alumni through the online resource of Facebook. The survey was online and open to Cal Poly affiliates from February 7th to February 16th, 2011. The survey itself consisted of 23 questions, and was divided into two main parts. (See Appendix for the survey instrument). The first question asked if the participant was affiliated with Cal Poly, which was necessary to eliminate potential respondents not affiliated with Cal Poly in some way. The next thirteen questions were focused on honey and consumer (respondent) online buying experiences. This series of questions was designed to determine specific consumer preferences including how often they bought honey, how likely they were to buy honey in the next month, the last time they purchased honey, where they purchased it, how much they paid, and questions relating to the awareness of Cal Poly honey on campus. The next section consisted of nine demographic questions to help determine the target market for Cal Poly honey.

Determining the capacity and production (and possible increases) of Cal Poly honey was also a necessary component for research to determine if sales and profit margins will increase. This was evaluated by a key-informant interview with Scott Jeffreys, who creates the production capacity necessary to make honey available for Cal Poly. This helped determine how much honey Professor Scott Jeffreys would be willing to sell online or what could be available for online use in excess of what is already sold to markets around campus. It would be helpful to determine if the production capacity of honey could be changed to assist the website, or to push

more product out in a quicker period. This is all useful information to determine if more production and better awareness of the product will increase the sales and profitability of honey.

Professor Scott Jeffreys was an essential asset to finding out this information since he is in charge of the bees and beekeeping class at Cal Poly. Meeting with Mr. Jeffreys was beneficial for information gathering such as recording how much honey was made each Fall and Spring, whether there was capacity for an increase in production and if so what to do about it, why there was no class during Winter quarter, as well as questions on who physically brings the honey to the markets. In the end, this bettered the understanding of the honey production and what takes to create more supply for the big demand. To collect the data it was important to speak with Mr. Jeffreys, as well as coordinating a good time to meet. Mr. Jeffreys was able to meet at the bee yard which is located near the lemon orchard on the Cal Poly campus. This was followed by questions and answers based upon the production of honey at Cal Poly, and what the Professor thinks could be done differently to increase the production.

## Procedures for Data Analysis

Data was collected via SurveyMonkey.com and entered into Excel for additional analysis using the SPSS statistical analysis program. Excel allowed the researcher to compare the variables that were collected through the online surveying. A series of statistical tests were run, including frequencies, target market analysis, and chi-squared tests. All of the questions on the survey were using nominal data. Nominal questions are questions that have description, but the numbers do not have any meaning beyond that. These questions were analyzed using frequency tables and

chi-squared tests within Excel. In this survey, there were 23 questions using nominal data. Once the data was coded into Excel, it was necessary to assess the demographic information to identify the target market. The easiest way to do this was with pivot tables, where each demographic question is broken down into basic percentages. After transferring data from SurveyMonkey, the target market was determined using the chi-squared tests. The target market was used as a variable to obtain descriptive data about how consumers more likely to purchase Cal Poly honey online differ from those who are not likely to purchase. As an example, for question 12, "How likely are you to buy honey in the next month?" a chi-squared test was run to determine if there was a significant difference between the target and non-target market respondents. For all of these tests, the null hypothesis was that there was no correlation between the variables, and the alternative was that there was a statistically significant relationship, or a strong correlation. To find meaningful results, a .10 significance level was used. If the test generated a p-value that was less than .05, then the null hypothesis would be rejected, meaning that there was a significant relationship between the two variables. On the other hand, if the generated p-value was greater than .05, the null hypothesis would not be rejected, indicating that there was no indication of a significant relationship between the two variables.

## Assumptions

This study assumes that all the interviewees from the online survey answer truthfully and honestly. The chosen population is assumed to be representative of the population to allow the data to reflect the people of San Luis Obispo that are affiliated to Cal Poly. It is also assumed that the data was entered into Excel correctly.

## Limitations

The results of the survey are limited only to the responses of people that are willing to take the survey online who are in some way affiliated with Cal Poly in San Luis Obispo. The survey was conducted online, so most of the participants are ages 21-24 in the San Luis Obispo area. The results were based solely on the preferences of students, faculty, staff, and alumni from Cal Poly, and do not reflect on all residents of San Luis Obispo County.

# Chapter 4

# DEVELOPMENT OF THE STUDY

## Data Analysis

The data collection took place over a nineday span during which 100 surveys from respondents were collected. All 100 of these surveys were collected online through SurveyMonkey.com. The gathered data was then coded using SPSS statistical software and input into an Excel file where it was assessed to allow elimination of any errors or obvious outliers. Once uploaded, the survey data were organized to conduct a valid analysis of the data. Demographic data were used to analyze the survey population. These data show the categories that the population fell into. This was done by creating target and non-target market data based on the respondents' answers.

The target market of 20 respondents was created by testing the variables from the following answers: respondents who were more than somewhat likely to buy honey within the next month, to purchase honey online as a gift, or who believed that their family was more than somewhat likely to purchase honey online. These variables were chosen because they share characteristics of someone who would be willing to purchase honey online. The likelihood of buying honey along with family members purchasing it online as a gift was a good match for determining who will buy honey.

The target market variable was tested against all other survey questions to determine levels of significance against the non-target market. The non-target market makes up the 80 respondents who are unlikely to buy honey in the next month as well as family members who do not shop online. This determines which questions in the survey are significantly relevant to the

target market to help concentrate efforts to attract the identified consumers. The test results provide relevant information but, as with many small-sample studies, are not intended to provide conclusions of the overall population at Cal Poly.

Table 4.1 shows the demographic characteristics for the entire population. Sixty percent of the respondents were male, and the majority was between the ages of 21 and 23. Most of the respondents were 4th year students at Cal Poly. Over 90% of all of the respondents were single. Four-fifths of the respondents also live in San Luis Obispo County and three-fourths of the population has completed some college. About half of the respondents are employed part-time, with another 32% of people who are not employed at all. Eighty-three percent of the respondents are earning less than $20,000 a year, and about the same percentage are white ethnically.

Table 4.1 also shows demographic characteristics of the target and non-target market. The target market, which is based upon how likely the respondents or their families are purchase honey online is used to determine the right group for which honey should be marketed for sales online. The target market makes up 20% of the population.

Chi-squared tests were run between the target and non-target markets to determine if there were significant relationships between the demographic factors and the target and non-target markets. A 10% significance level was used. The null hypothesis was that there were no significant relationships between a particular demographic and the two markets. The results for all of the demographics except for one group did not show any significant relationships between the target and non target markets. The only characteristics that showed a statistically significant difference was the education level of the respondents, which showed a p-value of .015. Because of this, the null hypothesis was rejected showing that there was a strong correlation between the education

level of the respondents and the target and non target markets. If the p-value is .05 or lower, than there is a correlation present in that particular problem.

**Table 4.1 Demographic Characteristics of Survey Respondents, by Market Segment**

| Question | Entire Sample | Target Market | Non-Target Market | P-value |
|---|---|---|---|---|
| | N=100 | N=20 | N=80 | |
| Q15 GENDER | | | | |
| Male | 40% | 9% | 31% | |
| Female | 60% | 11% | 49% | 0.610 |
| | | | | |
| Q16 AGE | | | | |
| 18-20 | 11% | 2% | 9% | |
| 21-23 | 85% | 16% | 69% | |
| 24-26 | 1% | 0% | 1% | |
| 27-29 | 1% | 1% | 0% | |
| 30-39 | 1% | 0% | 1% | |
| 40-49 | 0% | 0% | 0% | |
| 50-59 | 0% | 0% | 0% | |
| 60+ | 0% | 0% | 0% | 0.319 |
| | | | | |
| Q17 YEAR | | | | |
| 1st Year | 0% | 0% | 0% | |
| 2nd Year | 1% | 0% | 1% | |
| 3rd Year | 19% | 3% | 16% | |
| 4th Year | 60% | 11% | 49% | |
| 5th Year | 3% | 0% | 3% | |
| Alumni | 14% | 5% | 9% | |
| Faculty/Staff | 2% | 1% | 1% | 0.471 |
| | | | | |
| Q18 MARITAL STATUS | | | | |
| Single | 91% | 17% | 74% | |
| Married | 3% | 1% | 2% | |
| Living with a Partner | 5% | 2% | 3% | |
| Separated/Divorced | 0% | 0% | 0% | |
| Widowed | 0% | 0% | 0% | 0.434 |
| | | | | |
| | | | | |

**Table 4.1 (Continued)**

| Q19 RESIDENCE | Entire Sample | Target Market | Non-Target Market | P-value |
|---|---|---|---|---|
| San Luis Obispo County | 80% | 13% | 67% | |
| CA outside SLO County | 16% | 6% | 10% | |
| Outside California | 3% | 1% | 2% | 0.131 |
| | | | | |
| Q20 EDUCATION | | | | |
| High school graduate | 7% | 0% | 6% | |
| Some college | 75% | 13% | 62% | |
| College graduate | 13% | 4% | 9% | |
| Postgraduate work | 4% | 3% | 1% | **0.015** |
| | | | | |
| Q21 EMPLOYMENT | | | | |
| Employed full-time | 9% | 3% | 6% | |
| Employed part-time | 57% | 13% | 44% | |
| Not employed | 32% | 4% | 28% | |
| Retired | 0% | 0% | 0% | 0.307 |
| | | | | |
| Q22 INCOME | | | | |
| Under 20,000 | 83% | 17% | 66% | |
| $20,000-29,000 | 2% | 0% | 2% | |
| $30,000-39,000 | 2% | 0% | 2% | |
| $40,000-49,000 | 1% | 1% | 0% | |
| $50,000-59,000 | 3% | 0% | 3% | |
| $60,000-75,000 | 0% | 0% | 0% | |
| $76,000-99,000 | 1% | 1% | 0% | |
| $100,000+ | 4% | 1% | 3% | 0.148 |
| | | | | |
| Q23ETHNICITY | | | | |
| White | 83% | 18% | 65% | |
| African American | 1% | 0% | 1% | |
| Asian | 5% | 0% | 5% | |
| American Indian or Alaska Native | 0% | 0% | 0% | |
| Other | 10% | 2% | 8% | 0.652 |

a. Bolded numbers indicate a higher average where a statistically significant relationship was found.
b. P-values correspond to chi-squared tests.

Table 4.2 illustrates the responses from question 3 “How likely are you to buy honey in the next month?” Surprisingly, a combined 15% of the target market said that there is at least a slight

possibility that they will buy honey within the next month, where only 5% of the target market claimed that there is no chance they will buy. This is most likely because since students age 21-23 were the most respondents, not many of them are concerned with honey as much as staple food items. There was a significant difference between target market and non-target market respondents at a .10 level of significance.

**Table 4.2 Responses to "How Likely Respondents Are to Buy Honey Next Month?", by Market Segment**

| Response | Non-Target Market | Target Market | Grand Total | P-value |
|---|---|---|---|---|
| Certain will buy | 1% | **2%** | 3% | |
| Very probable will buy | 1% | **3%** | 4% | |
| Good possibility will buy | **7%** | 3% | 10% | |
| Fair possibility will buy | **10%** | 0% | 10% | |
| Slight possibility will buy | **32%** | 7% | 39% | 0.009 |
| No chance will buy | **29%** | 5% | 34% | |

Note: P-value corresponds to a chi-squared test.

Question 4 asks what amount the respondent bought last time they purchased honey. Table 4.3 shows the results that were analyzed using chi-squared tests. For this question, the null hypothesis was that there were no differences in the amount of honey bought and the two markets. Using a 10% level of significance, it was determined that there is a significant relationship between the target market and buying 1 bottle or jar of honey, because the p-value was shown as .095. Not very many respondents bought more than 1 bottle at a time, and this was shown by the low percentages for 2 or 3 bottles/jars.

**Table 4.3 Responses to "Amount of Honey Bought Last Purchase," by Market Segment**

| Response | Non-Target Market | Target Market | Grand Total | P-Value |
|---|---|---|---|---|
| 1 bottle/jar | **74%** | 16% | 90% | |
| 2 bottles/jars | 3% | 3% | 6% | |
| 3 bottles/jars | 1% | 1% | 2% | .096 |

Note: P-value corresponds to a chi-squared test.

Question 5 relates to where the respondent prefers to buy honey. The data was analyzed using chi-squared tests and the results are shown in Table 4.4. For the entire population, the grocery store was by far the most popular place for the respondents to buy their honey.

**Table 4.4 Responses to "Where Honey is Purchased?", by Market Segment**

| Response | Non-Target | Target Market | Grand Total | P-Value |
|---|---|---|---|---|
| Grocery Store | **69%** | 8% | 77% | |
| On campus | 4% | **6%** | 10% | |
| Online | **1%** | 0% | 1% | |
| Farmers Market | 2% | **4%** | 6% | |
| Other | 2% | 2% | 4% | .000 |

Note: P-value corresponds to a chi-squared test.

The Farmers Market was 6% of the target market population, with 14% also for on-campus and 'other' means of buying honey. Using a significance level of .10, the chi-squared test proved a

significant difference in location of purchases between the target and non-target market respondents.

Question 6 refers to what price the respondent paid per bottle or jar of honey. Figure 4.1 indicates the response for the overall sample. Almost 50% of the respondents spend between $4.01 and 6 dollars on a bottle of honey, while only about 16% of respondents are willing to spend $6.01 to 8 dollars. On the other hand, almost 30% of the population spends between $2 and 4 dollars, which is quite cheap for honey.

**Figure 4.1 Price of Honey**

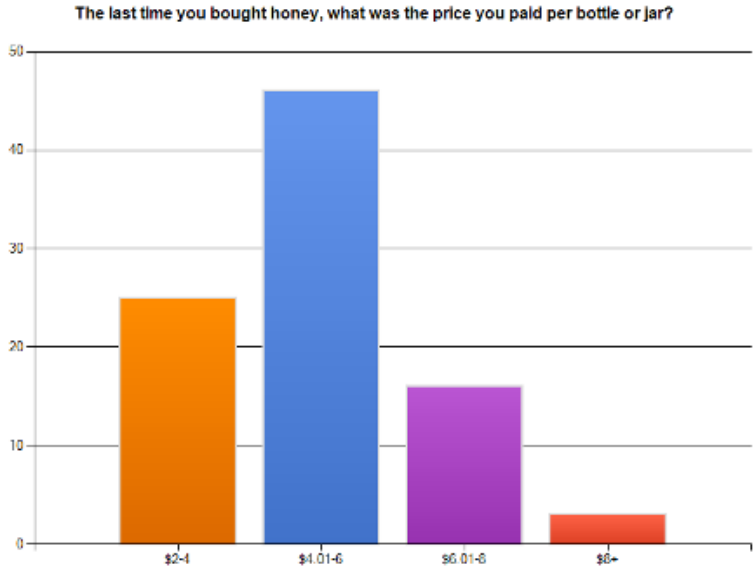


Table 4.5 shows the exact percentages for each of the price ranges of honey. A chi-squared test was run to determine significant relationships between the markets and the price of honey using a .10 significance level.

**Table 4.5 Responses to "Price for Honey," by Market Segment**

| Response | Non-Target | Target Market | Grand Total | P-value |
|---|---|---|---|---|
| $2-4 | 26% | **2%** | 28% | |
| $4.01-6 | 42% | **7%** | 49% | |
| $6.01-8 | **7%** | 9% | 16% | |
| $8+ | **1%** | 2% | 3% | .000 |

Note: P-value corresponds to a chi-squared test.

About 9% of the target market spent between $2 and $6 on honey. Using a chi-squared test and a significance level of .10, a strong correlation was found between the target market and the price for honey. This shows that how much the respondents were paying for honey influences their spending habits towards honey..

Questions 7 and 8 are summarized in Table 4.6. Question 7 asks the respondents if they are aware that honey produced by Cal Poly is sold in the El Corral Bookstore. Surprisingly, only 57% of the population knew that Cal Poly honey was sold in the Bookstore.

**Table 4.6 Responses to "Awareness on Honey Sold in Bookstore" and "Ever Bought It?", by Market Segment**

| | Non-Target | Target Market | Grand Total | P-value |
|---|---|---|---|---|
| Aware of honey sold in bookstore? | | | | |
| NO | **38%** | 5% | 43% | .069 |
| YES | **42%** | 15% | 57% | |
| | | | | |
| Ever purchased honey in bookstore? | | | | |
| NO | **67%** | 9% | 76% | .000 |
| YES | 1% | **9%** | 10% | |

Note: P-value corresponds to a chi-squared test.

Question 8 asks the respondents that if they answered 'yes' to question 7, then have they ever bought Cal Poly honey from the Bookstore. Nine percent of the target market answered 'NO' that they haven't purchased Cal Poly honey from the bookstore before. A chi-squared test was run and used to determine the p-value of both questions using a significance level of .10. Table 4.6 shows the outcome of the p-values and the percentages of the target market and non-target market. The null hypothesis was rejected for both questions 7 and 8 because there were significant relationships between both variables and the target market. This is most likely because the people who did know about Cal Poly honey being in the El Corral bookstore were also the same people who were most willing to buy Cal Poly honey as gifts for family and friends.

Questions 10 and 11 are similar in that question 10 asks respondents how often they shop for products online, and question 11 asks how often they shop for food products online. Table 4.7

shows these results that were analyzed using chi-squared tests. The null hypothesis for this question was that there were no differences between shopping online and buying honey.

**Table 4.7 Responses to Questions about Frequency of Shopping Online, by Market Segment**

| Response | Non-Target | Target Market | Grand Total | P-value |
|---|---|---|---|---|
| Shopping online | | | | |
| Never | **17%** | 2% | 19% | |
| Once a month | **47%** | 13% | 60% | |
| Once a Week | **13%** | 3% | 16% | |
| More than once a week | **3%** | 2% | 5% | .487 |
| | | | | |
| Food shopping only | | | | |
| Never | **72%** | 17% | 89% | |
| Once a month | **6%** | 3% | 9% | |
| Once a week | **2%** | 0% | 2% | |
| More than once a week | 0% | 0% | 0% | .462 |

Note: P-value corresponds to a chi-squared test.

The null hypothesis was not rejected for either question 10 or 11. This shows that there was not a strong correlation between the target market and shopping online frequently in question 10 with a p-value of .487. Question 11 has a p-value of .462 most likely because almost every respondent answered that they 'Never' shop for food products online.

Table 4.8 includes questions 9, 12, 13, and 14 which all deal with the likelihood of the respondents buying honey at the current price of $6.50 per 12oz bottle. Question 9 gives a little background on who the honey is produced by and what the sales go towards, not to persuade the population, but so that they know where the honey is coming from. Questions 12 through 14 are similar in that they ask the respondent how likely they would be to buy honey during the next

month, as a gift within the next year, and how willing family members would be to purchase Cal Poly honey within the year as well.

**Table 4.8 Responses to Questions Regarding the Likelihood of Buying Honey, by Market Segment**

| Response | Non-Target | Target Market | Grand Total | P-value |
|---|---|---|---|---|
| How likely to purchase at bookstore at $6.50/bottle? | | | | |
| Not Likely | **60%** | 6% | 66% | 0.000 |
| Somewhat Likely | **20%** | 8% | 28% | |
| Probably Likely | 0% | **4%** | 4% | |
| Very Likely | 0% | **2%** | 2% | |
| | | | | |
| How likely to purchase online? | | | | |
| Not Likely | **41%** | 2% | 43% | |
| Somewhat Likely | **31%** | 7% | 38% | 0.000 |
| Probably Likely | 6% | 6% | 12% | |
| Very Likely | 1% | **5%** | 6% | |
| | | | | |
| How likely to purchase online as a gift? | | | | |
| Not Likely | **46%** | 1% | 47% | |
| Somewhat Likely | **34%** | 3% | 37% | 0.000 |
| Probably Likely | 0% | **10%** | 10% | |
| Very Likely | 0% | **6%** | 6% | |
| | | | | |
| How likely that family would purchase online? | | | | |
| Not Likely | **42%** | 1% | 43% | |
| Somewhat Likely | **28%** | 6% | 44% | 0.000 |
| Probably Likely | 0% | **12%** | 12% | |
| Very Likely | 0% | **1%** | 1% | |

Note: P-value corresponds to a chi-squared test.

Chi- squared tests were run on each of these questions to determine their p-values with a significance level of .10. All four of these questions showed significance and strong correlation because of their low p-values. The null hypotheses were all rejected for all four questions.

## Honey Production Data

The meeting with Scott Jeffreys was crucial because production data could determine whether there is enough capacity to produce more honey or not. Based on Mr. Jeffreys' data, the average production of honey is about 1000 12oz bottles every Fall and Spring quarter (2000 bottles a year). He also explained that how much honey we produce at Cal Poly entirely depends on how much rainfall there is during Spring, and this is because the high volume of water in the soil gets into the plants which lead to more nectar in the flowers for the bees. Mr. Jeffreys explained many reasons why we are not producing more than we already are.

First, we would need more equipment, such as bee boxes, frames, and most importantly more bees, and all of these things cost money. Another reason for not producing more is that Mr. Jeffreys is only allowed 3 Enterprise Project students per Fall and Spring quarter. If we wanted to produce more honey, then Mr. Jeffreys would need more Enterprise Project students, possibly for Winter quarter, but Cal Poly is not willing to give him anymore students which makes it difficult. One would think that the students in his beekeeping class would also help out, but they only come out once a week for the lab so not much can get done in such a short period of time. Also, profit incentive is everything for the Enterprise Project, because the students in

the Enterprise get paid a small portion of the honey sales for that year. Mr. Jeffreys explained how if the students don't get paid for their work, then they tend not to show up.

Another very important reason for not producing more than we already are is the colony collapse problem. Colony collapse is a bee phenomenon that is sweeping the globe, killing off bees all over the world. The reason why is unknown, but many people believe that it is a disease that is traveling very fast, some think it is a mite that bores its way into the bees, and others believe it is a combination of both. But whatever the reason, bees are dying off and it is hurting beekeepers financially all over the world, even beekeepers here in San Luis Obispo. Mr. Jeffreys said the one most important reason of why we cannot produce more than we are is because the bees are dying off, hence colony collapse.

On another hand, there simply isn't much incentive for Mr. Jeffreys to produce much more than we already are. Mr. Jeffreys does not get paid anything for producing the honey- all of the profits go to the Fruit Science Department and the Beekeeping Enterprise students. It makes sense that Mr. Jeffreys would not care to produce much more honey when his paycheck does not change because of it.

# Chapter 5

# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

## Summary

A market research study on Cal Poly honey sales and production possibilities in San Luis Obispo were conducted through survey administration using SurveyMonkey.com to Cal Poly affiliated people. The survey took place over a 9 day span and consisted of 23 questions that gathered valuable information regarding consumer tastes and preferences, online shopping, and basic demographic characteristics. A total of 100 respondents took the online survey. Of the entire sample, a target market of 20 respondents was created by testing the variables from the following three questions: how likely the respondents are to buy honey in the next month, along with the likelihood that family will shop online for gifts of honey. Chi-squared tests were run for each question using SPSS to show the answers that were statistically significant.

Question 2 explained how most of the population buys honey once every 6 months or never. Also, in question 3, it shows how most of the respondents either have a slight possibility of buying honey (39%) in the next month, or are not willing to buy it at all (34%). The last time the respondents purchased honey, 96% of them bought only 1 bottle. Question 5 relates to where the respondent prefers to buy honey. 75% of the target market said they prefer to buy honey at the grocery store, with 0% of them stating they buy it online. About 80% of the population pays $6 or less per bottle of honey, according to question 6. Questions 7 and 8 ask about the respondent's awareness of Cal Poly honey in the El Corral Bookstore. Only 46% of the target

market is aware that it is sold in the bookstore, and of that 46%, 100% of them have never bought it from the bookstore.

Questions 15-23 showed the demographics of the population. 60% of the total respondents were male, and the majority was between the ages of 21 and 23. Most of the respondents were 4th Years at Cal Poly. Over 90% of all of the respondents were single. Four-fifths of the respondents also live in San Luis Obispo County and three-fourths of the population has completed some college. About 50% of the respondents are employed part-time, with another 32% of people who are not employed at all. 83% of the respondents are earning less than $20,000 a year, and about the same percentage of respondents are white ethnically. It is important to recognize that the population was not of San Luis Obispo residents in general, but rather a specific group of people because of time constraints and the willingness to take the survey online. Based on the information presented above, it is clear that it would be difficult to increase sales because of the lack of awareness, tastes, and preferences of the age group that was documented. Production would also be difficult to increase, because Cal Poly honey is already working at capacity.

## Conclusions

A series of chi-squared tests were run on the questions of the survey to single out the significant information that correlates to the end result; producing more honey so that more honey can be sold online. This appears unlikely based on the results of this study. Cal Poly honey is already at production capacity, so producing more than we do more right now would take too much time, money, and materials. Mr. Jeffreys, the Fruit Science professor and beekeeper at Cal Poly explained this by describing the lack of student help that is offered to him,

and also the natural extinguishers of bees such as colony collapse that is stopping big operations of honey-making from continuing all over the world. There is also not much of an incentive for Mr. Jeffreys since all of the Cal Poly honey profits go to the Department and the Enterprise Project students. Based on the answers from the survey questions, not too many people are interested in buying honey online, and the people that are interested in honey probably do not buy it often enough for online sales to make this a profitable market. There are many solid correlations of the target market of respondents to the honey, but nothing sufficiently strong to create enough sales and profits for an online honey store to thrive at Cal Poly.

## Recommendations

One option would be to consider if a lowered price of Cal Poly honey could increase sales sufficiently to increase revenues. This is very possible because based on the survey that was conducted, most Cal Poly students buy honey for around $4, and Cal Poly sells their honey for $6.50. Another option would be to consider if additional honey production would increase profits. Cal Poly honey at the moment is already at production capacity with the materials they have now, but more could always be made (with bee boxes, lids, bees, attractant, etc.) to increase the production.

Finally, it would be beneficial to determine what marketing strategies could increase awareness and potential sales of Cal Poly honey. This is an incredibly important aspect of selling Cal Poly honey, because 54% of the respondents did not know that Cal Poly honey was sold at the El Corral Bookstore, so there is definitely something that can be done about marketing the honey better. This could be partially done through advertising around campus,

which the Winter quarter Enterprise students could achieve in preparation for the Spring honey sale.

## References Cited


Anderson, S. And R. Renault. 1999. "Pricing, Product Diversity and Search Costs: A Bertrand-Chamberlain-Diamond Model." Rand Journal of Economics. (Vol. 30: 4) December. pp. 719–735.

Annese, Nicole. 2010. "Organic Wine Consumers in San Luis Obsipo County." Unpublished Senior Project. California Polytechnic State College, San Luis Obispo. Project #44.

Armstrong, J.S., V.G. Morwitz and V. Kumar. 2000. "Sales forecasts for existing consumer products and services: Do purchase intentions contribute to accuracy?" *International Journal of Forecasting.* pp. 383–397.

Arya, A., B. Mittendorf and D. Sappington. 2007. "The Bright Side of Supplier Encroachment." Marketing Science. (Vol. 26: 5) September. pp.651-659.

Bass, F. M, M. Givon, M. U. Kalwani, D. J. Reibstein and G. P. Wright. 2008. "An Investigation into the Order of Brand Choice Process". Marketing Science. (Vol. 3: 4) October. pp. 267-297.

Bell, D. R., J. Chiang, V. Padmanabhan. 1999. "The Decomposition of Promotional Response: An Empirical Generalization". Marketing Science. (Vol. 18: 4) September. pp. 504-526.

Bellman, S., G.L. Lohse, and E.J. Johnson. 2000. "Predictors of Online Buying: Findings from the Wharton Virtual Test Market." Communications ACM.

Butler, P. and J. Peppard. 1998. "Consumer Purchasing on the Internet: Processes and Prospects." European Management Journal. pp. 600–610.

Copper, James. 2009. "Advantages and Disadvantages of Direct Marketing." *Advantages and Disadvantages of Direct Marketing. Ezine Articles.*

MacDonald, Jason and Kirk Smith. 2001. "MacDonald, Jason and Kirk Smith. 2001. "California buyer behavior." Industrial Marketing Management. Volume 33, Issue 2, Pg. 107-116.

Morwitz, V.G., Steckel, J. and Gupta, A. 1996. "When do purchase intentions predict sales?" Stern School of Business, New York University, NY 10012.

Mottl. "Agriculture business begins to sow some online oats." *InternetWeek* no. 783 (October 4, 1999): 38. *Academic Search Elite*, EBSCO*host* (accessed January 25, 2011).

Mueller, R. 2001. "E-Commerce and Entrepreneurship in Agricultural Markets." American Journal of Agricultural Economics. pp. 1243-1249.

Stricker, Susanne, Rolf A. E. Mueller, and Daniel A. Sumner. "Marketing Wine on the Web." *Choices: The Magazine of Food, Farm & Resource Issues* 22, no. 1 (2007 1st Quarter 2007): 31-34. *Academic Search Elite*, EBSCO*host* (accessed January 25, 2011).

Yan, G. And J.C. Paradi. 1999. "Success Criteria for Financial Institutions in Electronic Commerce." Hawaii International Conference System Sciences. pp. 27-31.

APPENDIX

SURVEY OF CAL POLY HONEY

This survey asks about your purchases of honey and the frequency of your online shopping for food and other products. All responses will be confidential. Please answer all questions relevant to you to the best of your ability.

**Are you affiliated with Cal Poly in some way?**
YES
NO

**How often do you buy honey? (choose the answer that best describes your purchases of honey during the past year)**

Never

Once Every 6 months

Once a month

Once or more per week

**How likely are you to buy honey in the next month?**

Certain will buy (99 chances in 100)

Very probable will buy (80 chances in 100)

Good possibility will buy (60 chances in 100)

Fair possibility will buy (40 chances in 100)

Slight possibility will buy (20 chances in 100)

No chance you will buy (0 chances in 100)

**For the purpose of this survey, we are assuming honey is sold in bottles or jars which contain 12oz of honey. Based on this information, please answer the following questions.**

**The last time you purchased honey, what amount did you buy?**

1 bottle/jar

2 bottles/jars

3 or more bottles/jars

**Where did you purchase the honey you bought most recently?**

Grocery Store

On Campus

Online

Farmers Market

Other (specify)

**The last time you bought honey, what was the price you paid per bottle or jar?**
$2.01-4

$4.01-6

$6.01-8

$8+

**Are you aware that honey produced by Cal Poly is sold in the El Corral Bookstore?**

YES

NO

**If YES, have you ever bought Cal Poly honey at the Bookstore?**

YES

NO

**The honey produced by Cal Poly is sold at the bookstore for $6.50 per 12oz bottle. This honey is produced with the assistance of students in the Beekeeping class as well as the Beekeeping Enterprise Project. The revenues from the sales go to support this class and other educational activities. Given this, how likely are you to purchase Cal Poly honey at the bookstore at the current price of $6.50/12oz bottle during the next month?**

Not Likely

Somewhat Likely

Probably Likely

Very Likely

**Cal Poly is considering making honey produced with the assistance of students available for purchase online at a dedicated website. The online purchase would allow greater convenience in the purchase of honey produced at Cal Poly. The product would be packed and shipped anywhere in the US for the current price of $6.50/12oz bottle, plus reasonable shipping and handling charges. Given this, please help me understand how likely you would be to purchase Cal Poly honey online.**

**How often do you shop for any product online?**

Never

Once a month

Once a week

More than once a week

**How often do you shop for food products online?**

Never

Once a month

Once a week

More than once a week

**If Cal Poly honey were available for sale online at the current price of $6.50 per /12oz bottle, how likely would you be to buy Cal Poly honey online during the next month?**

Not likely

Somewhat Likely

Probably Likely

Very Likely

**If Cal Poly honey were available for sale online at the current price of $6.50 per/12oz bottle, how likely would you be to purchase Cal Poly honey to give as a gift during the next year?**

Not likely

Somewhat Likely

Probably Likely

Very Likely

**If Cal Poly honey were available for sale online at the current price of $6.50 per /12oz bottle, how likely would your family members be to purchase Cal Poly honey during the next year?**

Not likely

Somewhat Likely

Probably Likely

Very Likely

**Please tell us a bit more about who you are.**

**Are you……?**

Male

Female

**In what age range do you fall?**

18-20

21-23

24-26

27-29

30-39

40-49

50-59

60+

**If a Cal Poly student, what year at Cal Poly are you?**

1st Year

2nd Year

3rd Year

4th Year

5th Year

Alumni

Faculty/Staff

**What is your marital status?**
Married
Living with a partner
Single
Separated/Divorced
Widowed

**Where do you live?**
San Luis Obispo County
Other area of California
Outside California

**What is the highest level of education you have completed?**

High school graduate
Some college
College graduate
Postgraduate work

**What is your employment status?**
Employed full time
Employed part time
Not employed
Retired

**What is your income range?**
Under $20,000
$20,000-29,000
$30,000-39,000
$40,000-49,000

$50,000-59,000
$60,000-75,000
$76,000-99,000
$100,000+

**What is your ethnic background?**
White
African American
Asian
American Indian or Alaska Native
Other

**Thank you very much for completing this survey!**