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A Study of the Impacts of Social Media Outlets on Generation-X and Millennial Consumers' Beef Consumption, with an Emphasis on the Importance of Nutrition Information

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A Study of the Impacts of Social Media Outlets on Generation-X and Millennial Consumers' Beef Consumption, with an Emphasis on the Importance of Nutrition Information

Chang, Elliott, Sand, Dailey, & Blachford

This study examines the impacts of social media outlets on Generation-X and Millennial consumers' purchase choices of meat (beef, chicken, and other meat options). The emphasis of this study is on the effectiveness of social media to deliver information regarding nutrition and food preparation of meat products that may alter their consumption habits.

The Millennial consumers' now outnumber the Baby Boomer consumers. As a result the Beef Checkoff Board has made special efforts to better understand the determinants of beef purchases made by Millennial consumers. The Beef Checkoff Board has tried to connect with these consumers through social media platforms by providing information about beef nutrition and meal preparation. This study aims to examine whether this information shared through social media platforms can influence Generation-X and Millennial consumers' beef purchasing decisions.

To examine the impact of social media on Midwest Generation-X and Millennial consumers' meat choice, this study collected and compared the same consumers' household meat expenditure data in two time periods, with an injection of nutrition information in between two periods. To our knowledge, there is no empirical study of the influence of social media on consumers' meat consumption decisions by utilizing an Almost Ideal Demand model. By comparing the difference in resulting statistics, we are

able to examine how nutrition knowledge (delivered by selected social media) affects the Generation-X and Millennial consumers' choice (tradeoff) and their price and income elasticity of meat products. We also plan to utilize the data to identify potential consumer characteristics that play key roles in affecting consumers' meat consumption tradeoffs. Our findings can be used by the Beef Checkoff Board to better target the Millennial consumer segment.

Beef holds the largest market share of the United States domestic meat market, accounting for 30.5% of the U.S market's total value. The annual average beef consumption per capita in the Midwest was 73 pounds in 2005, approximately 6-7 pounds higher than the national average. A limitation of this study is that only Midwest Generation-X and Millennial consumers were surveyed

Consumer attributes (e.g., demographic background, socio-economic status, food and nutrition) have been recognized as main determinants for consumers' preferences, purchase choices, and willingness-to-pay (WTP). Scholars and industry have long understood the effectiveness to adopt the consumer-profiling strategies to identify and promote demand and value of products (Smith 1956).

Interestingly, the findings of consumer preference and food choice based on the differences in consumer characteristics often generates inconsistent, if not contradictory results. For instance, James et al, (2009) and Dentoni (2009) found consumers who were familiar with the product (especially the production process) had less preference and WTP to the product credence attributes, compared to other consumers who were less

familiar with the products. To avoid the potential inconsistency in the findings due to the differences in consumers, this study focuses on a specific cohort of consumers:

Generation-X and Millennial, those who are between 25-44 years old.

Based on the information gathered from authors' personal conversations with beef industry and stakeholders, the Millennial and Generation-X consumers represent a specific segment of consumers who are more likely to evaluate the quality of meat based on the health and nutrition concerns. The Cattlemen's Beef Board (2013) estimated that 45% of these consumers (aged from 25 to 44) would choose to purchase beef more often if they knew about the nutrition content. Recognizing this group of consumers' demand for healthier, leaner meat choices, the beef industry has launched a nutrition-based advertising campaign to educate consumers with fact-based nutrition information comparing lean beef with skinless chicken.

Literature

Previous studies have identified consumers' willingness to pay higher prices for intrinsic attributes such as taste, nutrition, tenderness (Purcell 1993; Killinger et al., 2004; Platter et al 2005; Unnevehr and Bard 1993) and extrinsic attributes such as location, retailer layout, production types, organic, and animal welfare (Wolf and Thulin 2000; Loureiro and Umberger 2003; Maynard et al., 2003; Ziehl et al., 2005). However, despite the recognized price premiums and high demand in the domestic and world markets, the U.S. domestic beef consumption has shown a decline over the past decades. The inflation-adjusted retail beef price has also declined about 25% from 1970 to 1998.

Among all the suggested reasons, health concerns are one of the determinants (along with other determinants such as price differentials and demographic changes) for the decreasing demand of beef and, and the rising market share of poultry/chicken products. For example, Menkhaus (1993) found that health concerns (i.e., fat and cholesterol) were one of the three most important determinants regarding consumers' demand for beef steaks, along with convenience (preparation and storage) and merchandising (price, marketing strategy). Ward (2004) found that households would consume much less beef if they worried more about fat content and cholesterol, compared to those with less concerns. Indeed, fat content has become a major concern for consumers and created a disadvantage for the market share of beef producers. For example, Boetel and Liu (2003) found consumers had reduced 6% of the beef consumption per capita per quarter since 1987 due to the concern of fat and cholesterol content.

Nevertheless, consumers who are not aware of nutrition information tend to presume beef as an unhealthy food choice despite the information published by the USDA that has suggested that eating beef can be a healthy choice for consumers. Data indicates that six of the leanest beef cuts contain only one more gram of saturated fat than skinless chicken breast. Moreover, these lean beef cuts provide eight times more vitamin B12, six times more zinc, and three times more iron than a skinless chicken breast (North Dakota Beef Commission 2013). Studies have found sound evidence of consumers' willingness to pay (WTP) for lower fat content in beef. For example, Lusk and Parker (2009) conducted a choice-based conjoint (CBC) survey study from a sample of 2,000

households and found consumers were willing to pay between \$3.48/lb to \$2.00/lb for reduced saturated fat in beef. Ward et al (2008) found consumers were willing to pay a premium of \$1.39/lb to reduce fat content from 80% to 96% leanness for ground beef. Brester et al. (1993) used the hedonic method to study the wholesale beef markets and found consumers would pay approximately a premium of \$0.02/lb to increase 1% leanness of ground beef. Parcell and Schroeder (2007) applied a similar method to consumers' self-reported records from Meat Panel Diary data and concluded that a 1% increase in leanness will incur an increase of \$0.039/lb in consumers' WTP for ground beef. These empirical evidences of WTP to reduce fat content suggest that consumers have put a strong emphasis on the health and nutrition concern when choosing meat products.

Social Media Users as Consumers

Young consumers are well-known for their effectiveness in communicating and learning through social media. Each social media outlet draws a different type of user, who is seeking different information from each social media outlet. However, little is known about which types of pins, posts and tweets that are the most desirable, effective and influential for consumers. In the recent years, social networks have gained more credibility and trust from the consumers. Instead of seeking product information from traditional marketing outlets (such as on-site visits or direct contacts with customer service sector through physical or telephone contacts), studies found an increasing trend of more consumers who gather product information from the social media (Darban and Li

2012). Darban and Li (2012) highlighted three types of influences created by social media that contribute to consumers' purchase decisions: Compliance (i.e., subject norm, or peer-pressure), Internalization (i.e., consumers adopt the idealized goal shared by the communities), and Identification (i.e., consumers who seek for social identity). Social media users groups (formally or informally) link different cohorts of consumers (i.e., on-line networks, blogs) together that create strong influences on consumers' preference and food choice through sharing information, or Bandwagon effects.

However, different social media platforms have different strengths and weaknesses on their impacts of consumer's purchase decisions. While some studies found strong influences of social media on consumer's preferences and purchase decisions, the conclusions often vary by the types of media, consumer characteristics, marketing strategies, and the nature of products. The relationship between consumers' acceptance and trust of social media, and the resulting purchase behaviors are often inconsistent. For instance, Akar and Topcu (2011) conducted a survey completed by undergraduate college students aged from 18 to 24 and found six factors that affected consumers' attitude toward social media marketing. For instance, their study results indicated that consumers who are frequent users of social media also tend to have more positive attitudes toward social media marketing. Moreover, their study results suggest gender significantly contributed to the different attitude and purchase patterns of on-line shoppers. Although this finding is consistent with the conclusion of earlier findings by Cha (2009), and Jen-Hung and Yi-Chun (2010), those earlier studies have suggested different reasons of how gender affects consumers' attitude and purchase decisions via the usage of social media.

Chau et al (2002) studied the potential differences in the purpose and practice of using internet and social media based on consumers' ethnic and cultural differences. They found consumers with different cultural backgrounds not only obtain different reasons to use internet, they also tend to have different interpretations of the information published on same Web sites.

Therefore, this study aims to study how the Generation-X and Millennial consumers respond to information received by social media in regards to their meat purchases and preferences. We hope the study results can be utilized by beef industry and South Dakota Beef Industry Council (SDBIC) to gain practical insights and information on tailoring content (tweets, posts, pins) for each social media outlet. Successfully providing the right information to the right consumer will increase the effectiveness of the current SDBIC social media platform. We also expect the study result will generate practical marketing insights to assist the beef industry in continuing to successfully target young consumers and increase their demand for beef.

Methodsg

To examine the impact of social media on Generation-X and Millennial consumers' meat choice, this study collected and compared the same consumers' household meat expenditure data in two time periods, with an injection of nutrition information in between two periods. The research team conducted a South Dakota, state-wide, household meat expenditure survey (targeted on consumers aged from 25 to 44) in May-August 2014 to gather information regarding target consumers' total household meat

budget, budgets for each type of meat, trade-offs between different types of meat (especially beef and chicken), and price elasticities.

The household survey had two steps. In the first step, the research team sent out an invitation email containing a questionnaire to gather consumers' socio-economic and purchase behavior information (May 2014). We followed the suggestions by Dillman (2000) to design and development the survey questionnaire. At the end of the survey, volunteers were invited to join the meat expenditure survey study, with an understanding that their participation in the study was voluntary. Once a participant agreed to join the study, the research team sent out a formal letter with a survey questionnaire to explain the purpose and procedure of the study. This individual also received an excel worksheet to help him/her keep detail records of the meat expenditure in a 2-week time period. At the end of the period, the participants were asked to mail back the expenditure records to the administrators. Each participant record should contain information regarding the household's meat purchases (types), unit prices paid, expenditures for each type of meat, and total meat budget.

Immediately after the first survey analysis was finished, the research team invited the same participants to explore the nutrition-related information provided by the research team through the three selected social media (i.e., Twitter, Facebook, and Pinterest) hosted by SDBIC. The researchers worked closely with the SDBIC to ensure the messages posted in these three media were as similar as possible. Although all the participants were encouraged to explore the three social media platforms, each participant

was assigned one of three media platforms to focus on searching for nutrition information during a 20-day experimental period. Each participant was asked to click “like”, “pin”, or “favor” the messages they read to assist researchers to record the frequency of site-visits and to estimate the quality of the media. Afterward, the survey participants were requested to record their household meat spending again for another 2 weeks.

Once the surveys were returned, the research team compiled the individual household records into an aggregated data set. An Almost Ideal Demand System (AIDS) model was applied to the data to examine sample consumers’ household meat expenditure and cross-price elasticities between different meat products. AIDS is a well-accepted consumer demand model originally developed by Deaton and Muellbauer (1980).

Previous studies have applied AIDS models to study consumer’s meat demand and preference. For example, Karagiannisa et al. (2000) applied AIDS with an additional adjustment of cointegration techniques (Balcombe and Davis 1996) and error corrections to study the Greek meat consumption data from 1958 to 1993. They found that beef and chicken are luxuries, but mutton-lamb and pork as necessities for Greek consumer. They also found that consumer preferences and price elasticities among these different meat products alter from short-term to long-term. Verbeke et al (2001) used a three-equation AIDS to study fresh meat consumption in Belgium during 1995-1998 and found a low fresh meat demand sensitivity to price changes over this period. They also found the TV press and advertising for fresh meat have relatively minor impacts on consumer’s preference and consumption compared to the negative press during the same time (mostly

for the concerns of Mad Cow Disease and hormone residues). Moreover, Hovhannisyan and Gould (2010) used a generalized quadratic almost ideal demand system (GQAIDS) to compare the differences in food preference and elasticity of 11 household food items, including beef, pork, and poultry. They compared two panels of Chinese household-level expenditure survey data (1995-2003) and found that uncompensated own-price, expenditure and income elasticity are key elements to explain the change of Chinese consumers' food preferences in these two time periods.

Little is known about the influence of social media on consumers' meat consumption decisions. To our best knowledge, there is no empirical study of the influence of social media on consumers' meat consumption decisions by utilizing the advantage of the AIDS model. Compared to other conventional, commonly-practiced market-demand models (such as Rotterdam model and Translog model), AIDS obtains the following advantages: 1) the structure of the system fulfills the axioms of choice by giving a first-order approximation; 2) the system enables researchers to test the homogeneity and symmetry restrictions by additional assumptions of estimated parameter values; 3) the function form is suitable for the structure and nature of the data; 4) AIDS allows researchers to avoid the computation complexity of non-linear functions (Deaton and Muellbauer 1980).

At a given set of prices, the AIDS model assumes rational consumers would attain a specific level of utility with minimum expenditures (Deaton and Muellbauer, 1980; Green, 2000). We applied the AIDS to examine consumers' household meat

consumption and the trade-offs between meat products by assuming: 1) consumers obtain a specific type of expenditure function representing their utility and preference to consume various meat products; 2) rational consumers would reach a specific utility level with minimized necessary expenditure by given prices and choices of meat products (Diviskera and Deegan 2010). We constructed a linear approximation of consumers' meat expenditure function under the framework of AIDS. The AIDS model specifies the share equations in an n-commodity system as

$$w_i = \alpha_i + \sum_{j=1}^n \gamma_{ij} \log p_j + \beta_i \log(X/P) \quad \text{and} \quad X = \sum_{i=1}^n p_i q_i \quad (1)$$

where w_i is the share associated with the expenditure of i th product, p_j is the price on the j th product, α_i is the constant coefficient in the i th share equation, γ_{ij} is the slope coefficient associated with the j th product in the i th share equation. X is the total

expenditure on the system of goods given ($X = \sum_{i=1}^n p_i q_i$ and q_i is the quantity demanded

for product j). P is an aggregated price index as

$$\log P = \alpha_0 + \sum_{i=1}^n \alpha_i \log p_i + \frac{1}{2} \sum_{i=1}^n \sum_{j=1}^n \gamma_{ij} \log P_i \log P_j \quad (2)$$

The products included in this study are beef, chicken, poultry, and other meats. We added the following restrictions on parameters of equation (1) to be consistent with the basic axioms of demand and utility theory:

$$\begin{aligned} \text{i) Adding-up condition: } & \sum_{i=1}^n \alpha_i = 1, \sum_{i=1}^n \gamma_{ij} = 0, \sum_{i=1}^n \beta_i = 0 \\ \text{ii) Homogeneity condition: } & \sum_{j=1}^n \gamma_{ij} = 0 \end{aligned} \quad (3),$$

iii) Symmetry condition: $\gamma_{ij} = \gamma_{ji}$.

Follow Divisekera and Deegan (2010), we calculated price and expenditure elasticity of meat products at sample means from the estimated parameters of equation (1).

Results generated through the AIDS method will provide detail information regarding consumers' household tradeoffs between various beef products (especially between beef and chicken). In addition, AIDS model also enable us to estimate households' price and income elasticity of meat and other food items. By comparing the difference in resulting statistics, we are able to examine how the nutrition knowledge (delivered by selected social media) affects the Generation-X and millennial consumers' choice (tradeoff) and their price and income elasticity of meat products. We also plan to utilize the data to identify potential consumer characteristics that play key roles in affecting consumers' meat consumption tradeoffs.

Results and Discussion

We expect the research results will allow for a better understanding on how social media influences Generation-X and Millennial consumers' beef consumption decisions. In addition, this information can be utilized by the beef industry to enhance marketing strategies in promoting beef consumption to the Generation-X and Millennial consumers.

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