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Analyzing Consumer's Calculation Factors in the Purchase Decision of Goat Meat

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This study identifies the major meat attributes preferred by consumers in the goat meat market. Based on data from a consumer survey in 2004, the study examines consumer rankings of major attributes of goat meat, identifies discrepancies among the rankings, and pinpoints most influencing attributes. The findings indicate a shift of consumer emphasis toward experience and credence attributes, especially low cholesterol content and safety assurance. The results have important implications for developing effective strategies to promote the goat meat market.

Many factors determine the purchase behavior of consumers in meat markets. Roughly, the factors form two major sets: one cluster is the characteristics of consumers and the other is attributes of meat products. The former has been a long-time focus of market-related studies, but a notable shift of attention toward the latter has been observed. Meat quality has gained considerable leverage in consumer purchase. Beharrell and Denison (1993) and many other studies found consumers would shop elsewhere rather than compromise on meat quality.

In fact, contemporary consumers view meat quality as not just one but a mix of attributes. In purchase, they first pursue satisfaction with the sensory attributes such as intrinsic attributes and extrinsic attributes (Chambers and Bowers 1993; Issanchou 1996; Steenkamp 1989; Steenkamp and van Trijp 1996); then they demand satisfaction with experience and credence attributes such as country of origin, USDA label, chemical additives, sodium content, cholesterol content, traceability of meats, quality assurance, and so forth. More attributes than ever before have entered the calculation domain in consumers' meat-purchase decision in recent years and more may emerge as public concerns increase in the future.

This study identifies the major meat attributes preferred by consumers in the goat meat market. Based on the data from a consumer survey in 2004, the study examines consumer rankings of importance for major attributes of goat meat, identifies discrepancies among the rankings and singles out the attributes most influencing purchase. Our find-

ings indicate a shift of consumer emphasis toward experience and credence attributes and increasing demand for low cholesterol and safety assurance. The results have important implications for developing effective strategies to promote the goat meat market.

Brief Review of Early Studies

Search, experience, and credence attributes and their roles in consumer's purchase decision had been noticed for a long time (Nelson 1970, 1974). The search attribute is the quality dimension verifiable prior to purchase, and it consists of *intrinsic* attributes (inherent to the physical properties) and *extrinsic* attributes (related to environmental and marketing factors). The experience attribute is the quality dimension that is not measurable until consumption. The credence attribute refers to the quality dimension that cannot be evaluated even after consumption.

Each of the three groups of quality attributes plays a role in the determination of the purchase decision. The search attribute has been a driving factor in purchase decisions (Chambers and Bowers 1993), where intrinsic search attributes carry more weight in the formation of quality expectations than do extrinsic ones (Steenkamp 1989; Steenkamp and van Trijp 1996). Experience and credence attributes did not drive purchase decision much in the past, but recent studies have found an increasing influence of these attributes on consumer purchase, although obstacles in gathering information still remain. Senauer, Asp, and Kinsey (1991) described meat products as experience goods. They claimed a shift in meat consumption, symbolized by the increasing public concern about animal welfare and potential health risks from residues in meat. Resurreccion (2003)

noticed that health-related attributes emerged as crucial factors in the determination of meat demand. A study by Hui, McLean-Meyinsse, and Jones (1998) confirmed that less chemical additives, low sodium content, and low cholesterol content were valued increasingly higher by consumers.

The studies mentioned above and other studies not cited here demonstrate that the analysis of the demand for meat products has gone beyond the vague quality conception and reached a level of in-depth examination of specific attributes. However, compared with extensive studies on other meat products, in-depth studies on goat meat are lacking. Except for a study evaluating the palatability of meat from certain breeds and ages of sheep and goats (Griffin et al. 1992), no studies were located in the major peer-reviewed journals consulted. The status quo of not knowing the favorable attributes in the goat meat market impedes the ability to transform the demand potential into real demand for goat meat. This partially explains why goat meat still accounts for a tiny share of meat markets and why demand did not match the production potential of resources available in the Southern United State. This study seeks to fill the information gap in this area.

Data and Methods

The data used in this study are from a consumer telephone survey conducted through the Survey Research Center of the University of Georgia in 2004. Interview data from 2,751 households in eleven southern states were collected. Following a complete random-sampling procedure, we collected sample units from 11 states, with a sample size of 237 to 257 households at each site. The questionnaire has 48 primary questions. Twenty-three are one-layer queries; the other 25 are multiple-layer queries in which one to eight sub-queries collect further information. As for attribute-related queries, we collected information on search attributes including intrinsic (various cuts, freshness, color, and fat content) and extrinsic (food-page advertisement, store display, price specials, in-supermarket taste test, safety assurance, convenient products) attributes, and we also gathered information on various experience and credence attributes such as cholesterol, free from chemicals, USDA label, etc.

Consumers were asked to rank the importance of attributes of goat meat in their purchase decision,

based on a measurement at five levels: not important at all, not very important, neutral, important, and very important. We coded the levels of importance as 1 (not important at all), 2 (not very important), 3 (neutral), 4 (important), and 5 (very important) in our analysis.

We used non-parametric approaches—the Kruskal-Wallis test and the Dunn test—to identify whether there were significant differences among consumer rankings for various attributes. The Kruskal-Wallis test is based on the sum of the importance rankings from the survey. It employs the chi-squared test to determine whether the importance rankings for the different attributes are equal. Dunn's procedure, on the other hand, uses pair-wise multiple comparison tests to determine which attributes differ in importance rankings. If the null hypothesis that all rankings are sampled from populations with identical distributions is true, then there is about a five-percent chance that at least one of the post tests will have $P < 0.05$. For those pairs with P -value less than five percent, we claim a significant difference in their impact on consumers' purchase decisions.

Results and Discussion

Consumer Preference for Chevron Cuts

Consumers showed preferences for various cuts in meat markets, but similar preferences were not identified in the goat meat market. Considering the limited cuts available in the goat meat market, this study collected consumer rankings for five major cuts: shoulder, ribs, hind leg, and loin chops. The results of Kruskal-Wallis test are reported in Table 1. We did not observe ranking differences between consumers at the five-percent confidence level, so in the strict sense we may say that consumers are indifferent to various cuts. However, in view of negative consequence from the type-2 error, we used a confidence level of ten percent to identify possible real difference and loin chops was then singled out as the favored cut, a determination which is also supported by the Dunn test.

Caution must be taken when making further inferences using the statistics in Table 1, because of the limited effective responses. More than two-thirds of responses show no preference for various cuts, which leads to less than one hundred observations available in the analysis. This no doubt limits

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Table 1. Wilcoxon Scores and Kruskal-Wallis Test.

| Attributes | Obs | Sum of scores | Expected under H0 | Std. dev. under H0 | Mean score |
|------------|-----|---------------|-------------------|--------------------|------------|
| Shoulder | 85 | 16472.5 | 18062.5 | 975.5 | 193.7 |
| Ribs | 89 | 18616.0 | 18912.5 | 992.2 | 209.1 |
| Hind leg | 85 | 17822.5 | 18062.5 | 975.5 | 209.6 |
| Loin chops | 86 | 20919.5 | 18275.0 | 979.7 | 243.2 |
| Loin cubes | 79 | 16269.5 | 16787.5 | 948.7 | 205.9 |

Pr > Chi-Square 0.001.

the reliability of any inference. Nevertheless, we may conclude that consumers in general do not have stable preferences for various cuts, except for those who claimed to usually favored loin cuts.

The low level of goat meat consumption may explain the lack of preferences for various cuts. When goat meat is consumed occasionally and at a very low level, consumers may not be clear about their real preferences, and hence unable to concretize their preference.

Consumer Preference for Other Attributes

It has been noticed that different attributes weigh differently in consumers' favor in other meat markets. To determine whether a similar phenomenon exists in the goat meat market, we collected information on attributes such as freshness, color, prepackaged products, variety of cuts, marinade products, convenience products, price, cooking instructions, inspection labels, and organically grown. Freshness and color are intrinsic search attributes; prepackaged products, marinade products, convenience products, and price are extrinsic search attributes; inspection labels are transformed credence attributes; and organic product is a credence attribute. We first examined the importance rankings of consumers who had been goat meat consumers prior to our survey.

The Kruskal-Wallis tests are reported in Table 2. The test results show significant differences among consumer preferences and demonstrate that intrinsic search attributes like freshness and color remain crucial in the purchase decision. Specifically, aside from government inspection labels and price, freshness and color ranked highest, which is consistent

with the assessment of intrinsic search attributes as a major factor in market purchase. The most important finding from the ranking comparisons is consumers' emphasis on government inspection labels. Inspection labels received the highest ranking of importance, which reveals consumer's increasing demand for food safety and suggests a shift of consumer preference toward experience attributes. The third attribute that drew our attention is the price specials of goat meat. Most consumers perceive price specials to be an important factor in their decisions, contradicting a long-standing claim that prices were no longer an active factor in meat markets, but it may be consistent with the fact that goat meat was mainly consumed by ethnic populations, a group known to be poor. If further confirmed, this has important implications for formulating effective marketing strategies in the goat meat market.

The attributes ranked between "neutral" and "important" are organic products, variety of cuts, and prepackaged products. These three attributes have been heated topics for studies of consumer preferences for years, and were deemed as most favorable attributes, but it seems that consumers in the goat meat market are not ready to pay extra for these attributes. The other group of attributes, including cooking instructions, marinade cuts, and convenience products, were ranked considerably low, indicating less attention is paid to those attributes in the goat meat market. These data reveal that the low level of consumption, associated with religion and occasional events, stimulates less demand for various cuts and convenient products. However, demand for those attributes increases when goat meat is more frequently served in the daily diet.

Table 2. Wilcoxon Scores and Kruskal-Wallis Test.

| Attributes | Obs | Sum of scores | Expected under H0 | Std. dev. under H0 | Mean score |
|-----------------|-----|---------------|-------------------|--------------------|------------|
| Freshness | 357 | 720129.0 | 619395.0 | 17313.7 | 2017.1 |
| Color | 349 | 762618.0 | 605515.0 | 17140.6 | 2185.1 |
| Inspection | 361 | 844409.5 | 626335.0 | 17399.2 | 2339.0 |
| Organic | 344 | 559076.5 | 596840.0 | 17031.1 | 1625.2 |
| Variety cuts | 343 | 585536.0 | 595105.0 | 17008.9 | 1707.0 |
| Prepackaged cut | 344 | 553519.5 | 596840.0 | 17031.0 | 1609.0 |
| Cooking inst | 353 | 376502.5 | 612455.0 | 17227.5 | 1066.5 |
| Marinade cuts | 336 | 458316.0 | 582960.0 | 16853.3 | 1364.0 |
| Convenience cut | 337 | 461386.5 | 584695.0 | 16875.7 | 1369.0 |
| Price | 345 | 697221.5 | 598575.0 | 17053.0 | 2020.9 |

Pr > Chi-Square < 0.0001.

Diversity of Consumer Preferences

The differences in preferences among three groups of consumers are examined in this section. The first group consists of consumers who ate goat meat, the second group consists of potential consumers who had not purchased goat meat at the time of the survey but were willing to make a purchase if goat meat were conveniently available in the market, and the third group consists of consumers who had not eaten goat meat at the time of the survey and were not willing to purchase goat meat in the foreseeable future. An examination on the first group will be helpful in keeping the existing market, while the understanding of other two groups is essential for expanding the existing market. We used the Kruskal-Wallis tests to identify potential differences in consumer rankings for a new attribute set. The results for each group are reported in Tables 3, 4, and 5, respectively. For simplicity of comparison, the average rankings for each group are summarized in Table 6. Some similarities in preference patterns among the three groups were revealed, but the differences in their preferences tell us things more valuable.

Attributes of Importance Identified with Current Consumers: The results of Kruskal-Wallis test (Table 3) demonstrate significant differences among consumer rankings for various attributes.

Meat safety was ranked highest among all attributes listed, followed by an extrinsic search attribute, price specials. Fat content (an intrinsic search attribute) and cholesterol contents (an experience attribute) come third and fourth, respectively. In contrast, advertisements and convenient products weigh less in consumer purchase. The preference pattern of this consumer group differs from the other two groups in that its ranking for each goat meat attribute is higher than of the other groups, demonstrating an overall favorite for goat meat products by the consumer group; experience attributes and credence attributes—specifically, safety assurance and fat and cholesterol content—represents the most favorable attributes in purchase decision; and price specials were ranked as the second most important factors in this group.

The current consumer group is dominated by low-income households, and this may lead to price being influential in the determination of purchase. The group, though likely to be poor, is aware of food safety, and demands that attribute as an essential element in their purchase.

Attributes of Importance Identified with Potential Consumers: The attributes valued by the potential consumer group are reported in Tables 4 and 6. Again, safety assurance takes the first place in rankings of consumers. The rankings for cholesterol and fat content jumped ahead of price special, reflecting

Table 3. Wilcoxon Scores and Kruskal-Wallis Test for Current Consumers.

| Attributes | Obs | Sum of scores | Expected under H0 | Std. dev. under H0 | Mean score |
|---------------------|-----|---------------|-------------------|--------------------|------------|
| Page advertisements | 416 | 461205 | 672880 | 17233.6 | 1108.6 |
| Store display | 404 | 589255 | 653470 | 17019.3 | 1458.5 |
| Price special | 405 | 755836 | 655087 | 17037.4 | 1866.2 |
| Supermarket taste | 399 | 527449 | 645382 | 16928.6 | 1321.9 |
| Safety assurance | 412 | 929387 | 666410 | 17162.7 | 2255.7 |
| Convenience product | 400 | 589441 | 647000 | 16946.8 | 1473.6 |
| Fat content | 397 | 694395 | 642147 | 16892.1 | 1749.1 |
| Cholesterol content | 401 | 684025 | 648617 | 16965.1 | 1705.7 |

Pr > Chi-Square < 0.0001.

Table 4. Wilcoxon Scores and Kruskal-Wallis Test for Potential Consumers.

| Attributes | Obs | Sum of scores | Expected under H0 | Std. dev. under H0 | Mean score |
|---------------------|-----|---------------|-------------------|--------------------|------------|
| Page advertisements | 532 | 717759 | 1112944 | 25281.3 | 1349.1 |
| Store display | 526 | 881120.5 | 1100392 | 25159 | 1675.1 |
| Price special | 524 | 1176363 | 1096208 | 25118 | 2244.9 |
| Supermarket taste | 520 | 935736.5 | 1087840 | 25035.6 | 1799.4 |
| Safety assurance | 530 | 1603635 | 1108760 | 25240.7 | 3025.7 |
| Convenience product | 516 | 952655.5 | 1079472 | 24952.7 | 1846.2 |
| Fat content | 516 | 1278271 | 1079472 | 24952.7 | 2477.2 |
| Cholesterol content | 519 | 1205295.5 | 1085748 | 25014.9 | 2322.3 |

Pr > Chi-Square < 0.0001.

Table 5. Wilcoxon Scores and Kruskal-Wallis Test for Unlikely Consumers.

| Attributes | Obs | Sum of scores | Expected under H0 | Std. dev. under H0 | Mean score |
|---------------------|------|---------------|-------------------|--------------------|------------|
| Page advertisements | 1493 | 6286439 | 8678809 | 117250.8 | 4210.6 |
| Store display | 1460 | 6933645 | 8486980 | 116136.4 | 4749.1 |
| Price special | 1464 | 8436483 | 8510232 | 116272.5 | 5762.6 |
| Supermarket taste | 1449 | 7044551 | 8423037 | 115760.6 | 4861.6 |
| Safety assurance | 1469 | 11825683 | 8539297 | 116442.2 | 8050.1 |
| Convenience product | 1428 | 7972238 | 8300964 | 115037.2 | 5582.8 |
| Fat content | 1432 | 9684183 | 8324216 | 115175.6 | 6762.6 |
| Cholesterol content | 1430 | 9392901 | 8312590 | 115106.5 | 6568.4 |

Pr > Chi-Square < 0.0001.

Table 6. Average Consumer Rankings for Various Attributes.

| Attributes | All consumers | Current consumers | Potential consumers | Unlikely consumers |
|---------------------|---------------|-------------------|---------------------|--------------------|
| Page advertisements | 2.17 | 2.52 | 2.26 | 1.97 |
| Store display | 2.57 | 3.15 | 2.73 | 2.25 |
| Price special | 3.17 | 3.76 | 3.43 | 2.77 |
| Supermarket taste | 2.62 | 2.92 | 2.88 | 2.32 |
| Safety assurance | 4.07 | 4.33 | 4.34 | 3.88 |
| Convenience product | 2.91 | 3.20 | 2.98 | 2.68 |
| Fat content | 3.45 | 3.61 | 3.75 | 3.27 |
| Cholesterol content | 3.35 | 3.52 | 3.55 | 3.17 |

the emphasis this consumer group places on health-related attributes. Price held fourth place among all attributes. Other attributes like convenient products and advertisements obtained the same low rankings as in the previous consumer group. Clearly, the potential consumer group takes into account a similar set of attributes in their purchase. What distinguishes them from current consumers is that they attach less value to price specials.

Attributes of Importance Identified with Unlikely Consumers: Unlikely consumers have no willingness to purchase goat meat, and their preferences for various attributes differ. They valued safety assurance high, but not as high as did the other two groups. What distinguishes the consumer group most is the low value assessment of fat and cholesterol content, which represent real concerns of the previous consumer group. The substantial difference may result from judgment errors due to the lack of knowledge about goat meat. This group may be able to afford other healthy meats, such as seafood, which provide substitutes for valued attributes of goat meat. Obviously there exists no simple solution to attracting this group to the goat meat market. Nevertheless, if any marketing strategy is needed for the promotion of sales, emphasis on the safety characteristics of goat meat is probably one of the few steps in the right direction.

Handling Non-Traditional Attributes

Consumers' notable emphasis on safety assurance is an important finding of this study. Considering the

consistent findings in other studies, we have reason to believe that experience and credence attributes will play an increasing role in the goat meat market in the years to come. However, the advantages of goat meat over others in non-traditional attributes will continue to be limited by obstacles in valuing experience and credence attributes. It is possible to measure experience attributes after consumption, but the cost could be unaffordable. An assessment of credence attributes usually is impossible, especially at the stage of reaching the retail shelves to confront consumers. Transforming experience and credence attributes into search attributes is the best way to facilitate consumers' information collection. In the goat meat market to date, consumers are rarely able to rely on firms' or government claims such as brand, advertisement, and labels to gather full information on experience and credence attributes. This has no doubt impeded the effective demand of some consumer groups. Hence the market is calling for transforming unobservable experience and credence attributes into search attributes, such as labels for free-range, organic, irradiated, etc.

Conclusion

Consumers weigh various attributes differently in their purchase. Intrinsic search attributes such as color and freshness remain a factor of influence, but experience and credence attributes—such as cholesterol content and safety assurance—are increasingly emphasized, while other attributes like various cuts or convenient products did not attract the expected attention from consumers in the goat meat market.

Consumer demand for food safety matches the advantages of goat meat over other meat. Low fat and cholesterol content will help to improve the image of goat meat in the competitive and saturated red-meat markets. The marketing strategies should be centered on these attributes. More attention should be paid to price, which may not be inelastic in the goat meat markets as in other markets. The high rankings of price by consumers suggest its potential role as an effective marketing tool for stimulating demand.

Goat meat has many qualities that match consumers' evolved demand. It should be possible to stimulate the demand for goat meat so long as safety assurance and other attributes are emphasized in the market.

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