Frozen Lamb: Consumer Product Characteristic Ratings and Repeat Purchase Behavior

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Relates the results of consumer evaluation of various cuts of frozen lamb looking at initial and repeat purchase behavior.

INTRODUCTION

Lamb, because of inherent characteristics, is one of the more difficult meats to efficiently physically distribute from the standpoint of maintaining shelf-life or eye-appeal of the retail product. This situation has led to research aimed at a new lamb marketing concept built around three priorities:

1. Put lamb into a frozen or semi-processed form that could provide a more durable and stable quality product at the retail store.
2. Develop a reliable means of processing, with quality control, which could be accomplished at processing plant level or at retail store level.
3. Develop a convenient use form of the product from the consumer's viewpoint as an enticement to try lamb.

Research efforts concerning these priorities have been underway for several years (see References).

This article reports the results of the latest of these research efforts which concerned consumer evaluation and repeat purchase behavior of a new line of frozen, boxed, boneless or semi-boneless lamb products. There were eight items in the line: 4 and 2.5 pound shoulder roast, 4 and 2.5 pound leg roast, shoulder steak, rib chop, and loin chop. Each of these products was test marketed in Tulsa, Oklahoma during late 1970 and early 1971. Tulsa was chosen because it is a relatively low lamb consumption area and has a rather typical urban area income profile among households. A low lamb consumption area was purposefully chosen for consumer evaluation and repeat purchase behavior, because if success can be attained in such an area, then success is even more likely in a relatively high lamb consumption area.

PRODUCT EVALUATION RESULTS

An important component of the test marketing of any new product is consumer evaluation of various product characteristics. This is one method of ascertaining consumer acceptance of the product.

The Sample

In order to generate a sample of households that had purchased frozen lamb, coupons were given to store customers in Tulsa entitling them to a price reduction if they purchased frozen lamb. This, of course, induced some customers to buy the product that may not have otherwise done so. Field personnel were stationed in 4 stores during 3 week-ends of March, 1971. When a customer accepted a coupon, field personnel recorded their name and telephone number. Customers were told they would be interviewed later by telephone for their evaluation of the product.

Couponing was used so that a sample of households that purchased the product could be generated at a reasonable cost. Although the sample generated through couponing is not random, the technique does allow for a larger sample to be generated for the same cost compared to a random sample.

Two denominations of coupons were offered to customers. One coupon entitled the customer to 50 cents off the purchase price, another entitled the customer to $1.00 off, depending on the size of the package the housewife desired to purchase. A total of 255 households accepted coupons and were subsequently interviewed within a week by telephone. These 255 households purchased a total of 266 frozen lamb items. Of the items purchased by these households, 21.0 percent were shoulder roasts, 16.2 percent were leg roasts, 14.2 per cent were shoulder steaks, 21.3 percent were rib chops and 27.3 percent were loin chops.

The Results

The grocery shopper of each household was asked to rate the frozen lamb item(s) they purchased on a hedonic scale for seven different characteristics.

The product characteristics rated were:

1. flavor
2. tenderness
3. juiciness
4. appearance of the item before cooking
5. meat color before cooking
6. lean vs. fat
7. over-all quality of the meat

In addition, the box was rated for (1) convenience of use and (2) appearance.

A weighted mean average hedonic score was computed for each lamb item by characteristic. This mean hedonic score allows comparisons to be made among items for the same characteristics. Space does not permit including product ratings for each characteristic so only the most important is included.

Over all items, the characteristic with the most favorable rating among all lamb items was "appearance before cooking" and the "box for convenience of use and appearance." The least favorable rating was the characteristic "lean vs. fat." Some consumers thought that some items had too much fat. However, the rating on this factor was still generally in the good category.

The mean hedonic score for "over-all quality" was best for the thick loin chop (Table 1). Other good ratings on "over-all quality were for the 4 pound shoulder roast and 2.5 pound leg roast. The shoulder steak had the least favorable mean hedonic score (3.6) for "over-all quality."

The over-all quality ratings of frozen lamb items were also categorized by the frequency of household fresh lamb use (Table 2). There was no statistically significant difference in over-all ratings given the frozen lamb product between fresh lamb user and non-user households. About 75 percent of all households rated the over-all quality of the item they purchased as good.

REPEAT PURCHASERS

A second telephone survey was conducted from 9 to 12 weeks after a household received a coupon and made an initial purchase of frozen lamb. These interviews were completed during May and the first week of June, 1971. The primary purpose of these interviews was to estimate the number of repeat purchasers of frozen lamb.

The longer-run success of any new product obviously depends on the number of households that continue to purchase it. In market research it is common to use the number of repeat purchase households as an indication of the number that will likely continue purchasing the product rather than making only a single initial purchase.

There were a total of 127 households included in the sample established for the purpose of estimating repeat purchase behavior. Of this total, 28.3 percent were actual repeat purchasers of frozen lamb within the 9 to 12 week period from their initial purchase (Table 3).

Caution must be exercised in interpreting the stat-

TABLE 1

Consumer Evaluation of Overall Quality, by Item with Mean Hedonic Scores Tulsa, Oklahoma

Frozen Lamb Item	No. of Households Purchasing	% of Respondents That Rated the Characteristic			Mean Hedonic Score*
		Good	Average	Poor	
4 lb. Shoulder Roast	28	90	10	0	2.0
2½ lb. Shoulder Roast	28	82	11	7	2.7
4 lb. Leg Roast	24	67	25	8	3.0
2½ lb. Leg Roast	19	89	11	0	2.2
Shoulder Steak	38	66	18	16	3.6
Rib Chop	57	65	26	9	3.0
Regular Loin	56	88	7	5	2.3
Thick Loin	16	87	13	0	1.9
Total	266	78	15	7	2.7

*A score of 1 to 3 is good, 4 to 6 average, and 7 to 9 poor.

Source: Survey data.

TABLE 2

Overall Quality Ratings of Frozen Lamb Items by Frequency of Fresh Lamb Use

Overall Quality Rating	User* Households	Non-user** Households
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Good	78.7	71.2
Neutral	14.8	18.3
Poor	6.5	10.5
Total	100.0	100.0

*"Users" - Households that normally purchase *any* type of lamb at least once every 3 months.

**"Non-users" - Households that normally purchase any type of lamb less often than once every 3 months (less often than 4 times per year)

Source Survey data.

TABLE 3

Repeat Purchases of Frozen Lamb by Frequency of Fresh Lamb Use

Frozen Lamb Repeat Purchase Behavior	User Households		Non-User Households		All Households	
	Number	Percent*	Number	Percent**	Number	Percent***
Repeat Purchasers	27	44.3	9	13.6	36	28.3
Non repeat Purchasers	34	55.7	57	86.4	91	71.7
Total	61	100.0	66	100.0	127	100.0

*A 95 percent confidence interval of 12.8 percent.
**A 95 percent confidence interval of 8.4 percent.
***A 95 percent confidence interval of 8.0 percent
****Chi-square – 14.64, significant at 0.01 level, 1df.

Source Survey data.

istics that appear in Table 3. First, the sample was based on only those households that were induced, through a price discount, to try the product initially. Secondly, repeat purchase behavior is a function of the time which elapses between initial purchase and repurchase. Had the interview been taken at some other time (more or less than 9 to 12 weeks after initial purchase), the percent of repeat purchasers would have been different. However, based on the results of this test, a general statement can be made that somewhere between 20 and 36 percent of those households that initially purchased frozen lamb could be expected to repurchase the product (1). The percentage of repeat purchases from non-user households is especially interesting (Table 3). Of those non-users initially purchasing frozen lamb, about 14 percent could be expected to continue buying frozen lamb. This is a better-than-expected "conversion" rate. The sample size and variance are such that this 14 percent mean could be expected to vary from 5 percent up to 22 percent. (2)

BUYING INTENTIONS

The second consumer survey also included questions concerning household buying intentions with respect to frozen lamb. Each household was asked if they intended to continue buying only frozen lamb, only other (fresh) lamb, both fresh and frozen lamb, or neither. Of the 36 repeat frozen lamb purchasers, 17 intended to continue buying only frozen lamb while another 18 intended to continue buying both fresh and frozen (Table 4). (3)

Of those households not repeat purchasing frozen lamb, about 17 percent indicated that they intended to continue buying only frozen lamb (Table 5). Another 33 percent intended to continue buying some frozen lamb.

There was a significant difference in intentions of non-repeat purchasers by their frequency of fresh lamb use (Table 6). As expected, a higher proportion of user households intend to continue buying frozen compared to non-user households.

Also, a significant difference existed between buying intentions of repeat and non-repeat purchasers (Table 6). Again, as expected, the buying intentions of repeat purchasers were more favorable with respect to frozen lamb than were the intentions of non-repeat purchasers. Nearly 66 percent of all households interviewed intend to continue buying some frozen lamb. Conversely, 34 percent intend to either buy only fresh lamb or no lamb at all.

Households that did not repeat purchase frozen lamb were asked the reasons for not repeat purchasing. About 33 percent of those households not repeat purchasing said they did not because frozen lamb was too expensive. This percentage was about the same between user and non-user households. Of significance is that about 33 percent of non-user households did not repeat purchase frozen lamb because they did not like the taste. This compares to only about 12 percent for user households. This suggests that households that do not intend to continue buying frozen lamb simply do not like the taste of lamb, rather than objecting to the new product as such.

About 8 percent of those not repeat purchasing said they did not because the item they tried was too fat. About 4 percent did not repurchase because of poor quality.

HOUSEHOLD INCOME LEVEL

No significant difference existed between either repeat purchase behavior or buying intentions by household income level. Neither was there any significant difference between user and non-user households.

TABLE 4

Buying Intentions of 36 Repeat Frozen Lamb Purchasers by Frequency of Fresh Lamb Use

Household Buying Intention	User Households*		Non-User Households*		All Households	
	Number	Percent	Number	Percent	Number**	Percent
Household Buying Intention	User Households*		Non-User Households*		All Households	
	Number	Percent	Number	Percent	Number**	Percent
Only Frozen Lamb	12	44.4	5	55.6	17	47.2
Only Other Lamb	1	3.7	0	0.0	1	2.8
Both Fresh and Frozen	14	51.9	4	44.4	18	50.0
Neither	0	0.0	0	0.0	0	0.0
Total	27	100.0	9	100.0	36	100.0

*** Sample size did not permit determination of whether**

*Sample size did not permit determination of whether or not statistically significant differences exist in intention between user and non-user households that were also repeat purchasers.

**Chi-square – 0.584, significant at 0.01 level, 2 df.

TABLE 5

Buying Intentions of 75 Non-Repeat Frozen Lamb Purchasers
by Frequency of Fresh Lamb Use

Household Buying Intention	User Households Number	User Households Percent	Non-User Households Number	Non-User Households Percent	All Households Number*	All Households Percent
Only Frozen Lamb	11	39.3	2	4.3	13	17.3
Only Other Lamb	4	14.3	13	27.7	17	22.7
Both Fresh and Frozen	13	46.4	12	25.5	25	33.3
Neither	0	0.0	20	42.6	20	26.7
Total	28	100.0	47	100.0	75	100.0

***Chi-square –**

*Chi-square – 28.020, significant at 0.01 level, 3 df.

Source: Survey data.

TABLE 6

Buying Intentions of Repeat and Non-Repeat
Purchasers of Frozen Lamb

Household Buying Intention	Repeat Purchasers Number	Repeat Purchasers Percent	Non-Repeat Purchasers Number	Non-Repeat Purchasers Percent	All Purchasers Number*	All Purchasers Percent
Only Frozen Lamb	17	47.2	13	17.3	30	27.0
Only Other Lamb	1	2.8	17	22.7	18	16.2
Both Fresh and Frozen	18	50.0	25	33.3	43	38.7
Neither	0	0.0	20	26.7	20	18.1
Total	36	100.0	75	100.0	111	100.0

*Chi-square – 25.318, significant at 0.01 level, 3 df.

Source: Survey data.

CONCLUSIONS AND IMPLICATIONS

To develop a higher per capita lamb consumption market from a traditionally low lamb consumption market, "first tryers" must be acquired. Results of this study indicate that new buyers are difficult to obtain except through intensive merchandising effort. These merchandizing efforts will likely need to include consumer economic incentives to acquire purchasers from non-user households. An encouraging aspect of the research was that nearly 14 percent of new buyers — ones from traditionally non-user households — actually repeat purchased the new frozen product within 9 to 12 weeks from initial purchase. In addition, nearly all of these new buyers expressed an intention to continue buying some frozen lamb. This clearly indicates the need for an economical merchandising technique which generates new buyers. It further implies that conventional merchandising techniques such as point-of-purchase display material and media advertising, while helpful, are not likely to generate, by themselves, the desired level of sales for the entire line.

Merchandising techniques that hold promise are couponing, as used in this research, or advertising tie-in arrangements between retailers and processors. The economic feasibility of these and alternative techniques should be evaluated however, before they are used extensively. With concentrated marketing-merchandising effort frozen lamb can be sold in low lamb consumption areas.

From the retailer's viewpoint, frozen lamb alleviates many problems associated with handling fresh lamb. The most obvious advantage frozen lamb has over fresh is extended shelf life. Other advantages can be in terms of ordering only part of a carcass (i.e. – order only leg roasts, or whatever sells best in the particular store) and in-store labor savings on cutting and/or wrapping. The new frozen product will likely command retail shelf space that would be lost with only fresh lamb availability.

In summary, the new product line, although not without problems, is a useful addition which holds promise for converting "first tryers" into regular lamb users.

REFERENCES

(1) Branson, Robert E. and W. B. Lester, **Cost Per Serving As a Consumer Concept in Buying Meats,** Texas Agricultural Experiment Station and Economic Research Service Report, U.S. Department of Agriculture, College Station, Texas, September, 1966.

(2) Carpenter, Zerle and G. Smith, **Evaluation of Concepts for Possible Improvements in Marketing Distribution and Merchandising of Lamb,** Department of Animal Science Report, Texas A&M University, College Station, Texas, September, 1970.

(3) Lester, W. B. and Robert E. Branson, **A Summary Report, Netted Lamb Roasts – Texas Consumer Market Test**, Texas Agricultural Experiment Station Report MP–821, Texas A&M University, College Station, Texas, December, 1966.

(4) Sporleder, Thomas L. and Robert E. Branson, **Retail Test Marketing and Consumer Evaluation of Frozen Lamb**, Texas Agricultural Market Research and Development Center Research Report 71–4, Texas A&M University, College Station, Texas, September, 1971.

(5) Tuma, H., **Development of Processing and Marketing Conditions to Retail Frozen Lamb**, Technical Report, Kansas State University, Manhattan, Kansas, 1969.