THE INFLUENCE OF BRANDS UPON CONSUMER PREFERENCES FOR FROZEN, WHOLE TURKEY

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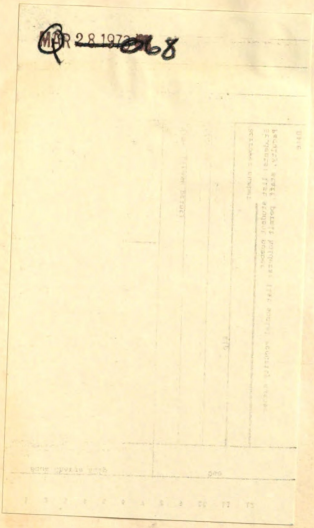

ABSTRACT

THE INFLUENCE OF BRANDS UPON CONSUMER PREFERENCES FOR FROZEN, WHOLE TURKEY

by James Clarence Makens

The turkey industry is cognizant of the fact that the Consumer is "king" and has the power to affect the entire industry through his marketing decisions. Therefore, it is imperative for marketers to have a knowledge of the factors which influence his purchasing decisions. One of the factors is the brand which appears on the bag covering a turkey. The use of brands is an accepted marketing practice within this industry, yet very little information has been published concerning their ability to influence consumer preferences.

A study was conducted to determine the ability of brands to differentiate turkeys of similar weight and quality in terms of consumer preference. The study was also designed to determine the extent of market segments which are positively and negatively affected by brands. The segments, consisting of positively influenced consumers, were further divided into groups who would be willing to pay price

premiums for a well-known brand turkey.

Preference panels in Detroit composed of consumers who represent approximately 79% of the gross income of residents of that city were used throughout the various tests. Results from these panels indicate that certain brands presently in use today detract from consumer appeal. One brand ranked lower than unbranded turkeys of the same size and quality. Panel members were also positively influenced by a well-known and advertised brand.

A significant number of consumers approved of one brand to the point that they preferred samples of meat marked as taken from this brand turkey in contrast to identical samples identified as having been taken from a brand not sold in the Detroit area.

The results further showed that 20 to 25 percent of the consumers involved were willing to pay a premium for a well-known brand. As many as 33 percent demonstrated a willingness to pay five cents per pound extra for this brand turkey. In addition, approximately 60 percent of the consumers consistently preferred this brand to unknown brands of similar weight and apparent quality.

All well-known brands do not have the same appeal to consumers. One well-known brand consistently ranked lower, often below unknown brands. Similarly, two unknown brands did not rate equally as one was preferred to the other a significant number of times.

Personal inspection appeared to be the most important factor involved in the selection of turkeys. Brand names appeared to be relied upon when consumers were unable to observe differences in product quality between competing turkeys.

Comments were given by consumers which indicated that a brand label can be too large and thus cover too extensive an area. Further comments indicated that the words, "tendons pulled and oven-ready" add to the sales appeal of turkeys. In addition, several consumers stated that a turkey with cooking and defrosting instructions was preferred to one without them.

A majority of the panel members did not appear to be positively influenced by a "Michigan grown" appeal incorporated within the brand label.

It was found that many of the participants did not react in a ranking test and sales test as they said they would when given a written questionnaire. The use of many written questionnaires in market research may be seriously questioned as a result of this study.

THE INFLUENCE OF BRANDS UPON CONSUMER PREFERENCES FOR FROZEN, WHOLE TURKEY

By

James Clarence Makens

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A fellow graduate student, Mr. R. A. Marquardt, cooperated with the author in the planning, execution and evaluation of sections VIII and IX of this study. These two sections, therefore, represent the joint efforts of Mr. Marquardt and the author.

Assistance of a different nature was also given by the author's wife and parents. It would have been impossible to complete this thesis without the willingness of my wife to accept and share the difficulties of graduate study and the strains it placed upon a growing family. My parents also deserve special credit since it was their interest in and support of my education that first directed me to college and later to graduate study.

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INTRODUCTION AND REVIEW OF LITERATURE

The subject of brands has largely been overlooked in regard to the power they exert in influencing consumer preferences for turkey. Certainly turkey brands exist but there is little evidence from marketing literature to indicate whether they are adequately performing the function for which they were designed.

Definition of Brand

Before proceeding further in this discussion it is well to establish exactly what is meant by a brand. The American Marketing Association has accepted certain marketing definitions which were compiled by Ralph S. Alexander (1960). The definitions accepted by this organization are as follows:

> Brand -- A name, term sign, symbol, or design, or a combination of them, which is intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors. A brand may include a brand name, a trade mark, or both. The term brand is sufficiently comprehensive to include practically all means of identification except perhaps the package and the shape of the product. All brand names and all trade marks are brands or parts of brands but not all brands are either brand names or trade marks. Brand is the inclusive general term. The others are more particularized.

A brand name is defined by the American Marketing Association as,

> A brand or part of a brand consisting of a word, letter, groups of words or letters comprising a name which is intended to identify the goods or services of a seller or a group of sellers and to differentiate them from those of competitors.

Reasons for Existence of Brands

A point of clarification is the role of brands in marketing. They can best be understood by looking to economic theory. Economic theory states that under conditions of perfect competition brands do not exist. According to Kohls (1955) an assumption of perfect competition is that "There is no product differentiation. This does not mean there are no differences in quality. However, products of like quality will not be differentiated by brand name, advertising, extra services and so on."

It is a well recognized fact that perfect competition does not exist in the real world of business and that instead a condition somewhere between pure competition and pure monopoly exists for the great bulk of firms. This condition is commonly referred to as imperfect competition. Again according to Kohls (1955) under these conditions, "Each firm attempts by differentiation to create a monopoly for its own product. But the demand for this product is very elastic since there are many close substitutes from the other firms in the industry."

This differentiation then is achieved by means of branding the particular goods of a firm. The value of a

brand, therefore, depends upon the extent to which the brand allows the product it represents to be distinguished from other similar products.

Opinions Which Show an Increasing Awareness of Importance of Brands to Poultry Industry

Recently, a few articles have appeared in various periodicals which give evidence of an increasing awareness of the value of brands to the poultry industry. An article in the April 6, 1963, issue of Poultry and Eggs Weekly (anonymous-1963) quoted Mr. Gordon Johnson, President of Gordon Johnson Industries as placing much importance upon brands in his company's bid to successfully capture a larger portion of the broiler packaging market using the "Chil-Pak" system of freezing and packaging. He believes broilers should be consumer packaged at the processing plant level and sold under brand names and that those brands should be actively advertised and promoted to consumers.

Similar viewpoints were expressed by Dr. R. R. Dince (1962) of the College of Business Administration, University of Georgia, in an article which called for a "Sunkist" program for broilers. He stated that the poultryman finds it difficult to apply the marketing techniques he sees used for other products and said,

> The poultryman doesn't buy cigarettes, he buys brand X. He doesn't buy potato chips, beer, clothing, cars, pianos, TV sets, he buys a brand. It makes little difference that there

> is little or no differences between the brands - the important thing is that the customer thinks there is.

A second and important point since it is directly correlated with the conclusion which can be drawn from this study concerns the ability of a firm to establish a brand name. Dr. Dince stated,

> . . . investing in a successful brand name is as expensive as building a new plant. Further, it is not a one shot deal, but must continue year after year to protect the investment. A half million dollars would be a small sum for a successful effort.

Similar opinions concerning brands were expressed by Louis Cheskin (1962) a well-known market researcher in an article in Poultry Processing and Marketing. He stated,

> From the marketing aspect it is imperative for every marketer to be aware that the only way his business can expand is by selling a brand, not a product. As long as he sells chicken instead of Brand A chicken or eggs he should not anticipate great business growth. His competitor can take his business away from him merely by reducing the price one cent per pound or one cent per dozen. As long as chickens are chickens and eggs are eggs, nothing matters but the price and competition, merely on the basis of price, diminishes profit, often to no profit at all.

Published Research Results Concerning Influence of Turkey Brands

Very few research reports concerning the possible importance of turkey brand names were found in a search of the literature. Information was requested from the National Turkey Federation and the Quality Brands Association of America, Inc., but both organizations replied that they had

NO information. Mr. G. L. Walts (1962) of the National Turkey Federation, replied, "We do not have any data whatsoever concerning the influence of brands upon sales of turkey." A similar answer was given by Mr. J. E. Lewis (1962), Secretary of the Quality Brands Association. He stated, "We can be of no help to you with regard to your request. We have no information in that area."

Several major U. S. newspapers have conducted brand surveys covering many different products, and letters were sent to the advertising departments of these newspapers, requesting a copy of their reports. Many of the advertising departments returned the requested material. A total of seven of these included frozen poultry but only one included frozen turkeys alone. The studies including these data were received from the following newspapers: The Charlotte Observer and News; The Toledo Blade and Times; the Youngstown Vindicator; the Detroit Free Press; The Indianapolis Star and News; the Omaha World-Herald; and the Salt Lake Tribune. Of these seven, the last two did not provide the entire study but gave excerpts of their studies.

Since turkeys represent the bulk of frozen whole poultry which is sold, these data can be used to gain some indication of brand preference for turkeys even though frozen poultry is a more inclusive term. It is interesting to note that turkeys were not included as a separate item since hundreds of other products including product breakdowns

such as kidney beans and diet bread were included. The one study which included only turkeys was conducted by the Newspaper Agency Corporation as reported by the Salt Lake Tribune (1962).

Although the type of studies varied by newspapers, certain similarities did exist. Six of the studies asked which brand the consumer had purchased during the last 30 days. It is not known what length of time was considered in the Salt Lake Tribune study and the procedure was not given.

The percentage of individuals, who did not know what the last brand was which they purchased, varied from 12.3 percent to 44.5 percent in the five complete studies. These percentages were as high or higher than those for any other product. The only other product's brand names which were unknown by so many persons were those for frozen fish. In contrast, certain product brands such as cigarettes were unknown by less than 1 percent of the users of this commodity.

It is also interesting to note that in two of the studies, nearly five and one-half percent of the users listed Beltsville as a brand name. Beltsville is not a brand but is a variety of turkey.

The importance of turkey brands as they influence consumers' preferences, was also given by Makens (1960). In this study, 2,800 consumers were sent questionnaires and

were asked to indicate whether they depend upon reputation of store, brand name, federal grade, personal inspection or some other factor when purchasing turkeys. A total of 28 percent indicated that they depend upon brand names. During the same study, independent and chain retailers were asked which factors they believed consumers used to select turkeys. Seventeen percent (17%) of the independent grocers and 29 percent of the chain grocers indicated that brand names was the factor used.

A study conducted by Alderson Associates in conjunction with the Market Research Division of E. I. du Pont de Nemours & Company includes data which are important to an understanding of the usefulness of turkey brands (Du Pont 1958). This study indicated that 29.8 percent of the purchases of frozen, whole turkey were specifically planned, i.e., 29.8 percent of the turkey purchases had a particular brand of turkey in mind before they entered the store. An additional 36.2 percent had planned to purchase a turkey but did not have a specific brand in mind. It is also interesting to note that 10.6 percent of the consumers purchased a turkey as a substitute item for some other product such as a beef roast and that 23.4 percent of the purchases of turkey were entirely unplanned. This means that 23.4 percent of the consumers did not intend to purchase a turkey either as a first choice or as a substitute for some other commodity when they entered the store. The study, therefore, concludes

that 70.2 percent of the purchase decisions regarding frozen, whole turkey were made in the store.

Research Results Concerning the Influence of Brands on Broilers and Egg Sales

Since little information could be found concerning the present importance of turkey brands to marketing, a search of literature concerning other poultry products was undertaken. The most important finding was a study conducted by Mountney et al (1959). This study indicated that brand name was the prime selection factor used in selecting frozen broilers by a sample of Houston, Texas consumers. Younger housewives and college graduates placed more emphasis on brands than did other shoppers. It also showed that brand names were relatively unimportant in the purchase of fresh whole broilers but became more important with cut-up broilers.

A limited amount of information was also found concerning the influence of brands relative to the sale of eggs. The results of a study by Hoyt and Dawson (1960) showed that brand name was not of major importance in the consumer purchase of eggs.

The latest information concerning the influence of egg brands was provided as a result of the Daisy Crest venture as reported by Bodurtha (1962). This sales venture employed a brand "Daisy Crest" a product of Custom Farms which in turn was sponsored by the Northeast Poultry Producers

Council. Prior to the market introduction and advertising of Daisy Crest eggs in the Rochester, New York, area, only 11.8 percent of the Rochester consumers could identify eggs by any brand name.

After a 13 week period in which Daisy Crest eggs were advertised and sold at a 4¢ premium, consumers were again interviewed. This time twenty-one percent of the consumers could correctly identify the brand they purchased and nearly thirty percent revealed that the name Daisy Crest meant something about eggs. This occurred when Custom Farms advertising for Daisy Crest eggs had ceased almost eight weeks previously.

Comments from individuals closely associated with the project are, of course, biased but do indicate the thinking which was associated with the project. An advertising agency executive stated,

> For the first time, the industry is being given the chance to own its own rapport with the consumer, not to be left to the policies and decisions of those in the market. The sales certainly provided proof that consumers can be convinced that some eggs are better. There is a difference in eggs and the way to promote them is to sell this difference.

Richard Ammon, Executive Secretary of NEPPCO stated, "A housewife can be sold on paying a few more cents for a quality brand name in which she has confidence."

In the final analysis, however, it must be admitted that the project failed from a business standpoint for a variety of reasons. Nevertheless, it proved that a brand preference can be established for eggs.

PROCEDURE

This study was conducted through the use of consumer panels. The one used for most of the tests was a Detroit Preference Panel held at the Home Economics Department of Wayne State University. Panel meetings were held in September, 1962, November of 1962, February, 1963, and April of 1963. Two panel meetings were held each day, one in the afternoon and the other in the evening.

This panel has been in existence since 1956; however, a continuous replacement program insured that the same group of consumers would not be present for each panel although certain individuals might (Larzelere, 1956). Panel members were selected on the basis of education, age and income level. This information was received from questionnaires which had originally been sent to individuals randomly selected from the Detroit telephone directory. The panel members had incomes ranging from $4,000 to $10,000; had received a high school education; and were between 31 to 45 years of age.

Several different tests were used during the four panels and these will be subsequently explained. These included a sale, written questionnaire, taste test and a test to determine utility.

A total of eight different commercial brands were used throughout the study. These represented brands that are sold in the Detroit market and brands which are not sold in this market. These brands have been coded and will be referred to as letters of the Greek alphabet throughout this paper.

In each of the panel meetings a ranking test was used. A number of turkeys, usually four, were placed in metal trays which were filled with chipped ice. This group of turkeys was then identified by a series number which was a Roman numeral. Within any series, each of the individual turkeys was identified by a symbol such as %, &, *, (), or #. This symbol was placed on a card in front of the turkey and corresponded to a similar symbol on the score card held by the participant. These symbols were used instead of letters or numbers to avoid bias and confusion. These symbols have no implied order as do letters or numbers and therefore have a neutral value.

After examining the birds within a series, the participants ranked them according to their personal preferences. The panel members were told to judge the turkeys as if they were going to buy one.

A second consumer panel was used only once. This consisted of a group of nearly one hundred housewives who were attending the 36th Annual Homemakers' Conference on the Michigan State University campus, in July, 1963. Again

the panel procedure was the same but the panel members were not previously selected as representative of any group. This panel was, therefore, used primarily to test the acceptability of a new market research technique.

The Detroit Preference Panel was used during the study for several reasons as follows:

1. The panel was established. This minimized costly arrangements and lessened the research time.
2. The study was limited by available funds. This eliminated the possibility of using other research techniques which involve costly interviews and secretarial help.
3. The panel offered a chance to establish controls. Certain controls were necessary during this study which were possible only through the use of a panel.
4. The results of previous panel studies have shown that the answers given are a fairly reliable indicator of consumer market actions.
5. The panel contained both new and repeat members. This allowed a comparison to be made of the results given between individual panels and between members.
6. Academic counsel was available to aid in planning the panel tests. The panel director was willing to give counsel concerning procedure and analysis of various tests.
7. The use of a panel was familiar to the writer.

Therefore, modifications and additions to the procedures were easier to incorporate as well as entirely new tests.

Statistical Analysis

The statistical methods used in this study consisted of both parametric and non-parametric techniques. The non-parametric techniques do not make numerous or stringent assumptions about parameters and hence are not necessarily based on the assumption that a normally distributed population is involved. Four principal advantages of using non-parametric statistics in work involving the behavioral sciences are given by Siegel (1956). First, the tests are "distribution-free"; that is, they do not assume that the scores under analysis were drawn from a population distributed in a certain way. Secondly, non-parametric techniques may be used with scores which are not exact in any numerical sense, but which in effect are simply ranks. A third advantage is their computational simplicity and finally, they are useful with small samples.

The statistical analysis involved the use of the following parametric and non-parametric techniques: Binomial Test, Kendall Coefficient of Concordance, Chi Square, Regression Analysis and the Wilcoxon Matched-Pairs Signed Ranks Test, Siegel (1956) and Croxton and Cowden (1955).

EXPERIMENTS

I. Panel Ranking, September, 1962

The study was initiated with a panel test during September, 1962, and was based on a set of two related hypotheses. These were as follows:

H_o: Panel members do not prefer either branded or unbranded turkeys.

H_I: Panel members do prefer either branded or unbranded turkeys.

H_o: Panel members do not prefer one brand of turkey to another.

H_I: Panel members do prefer one brand of turkey to another.

It can be seen that these beliefs which were held were pessimistic concerning the influence of brands on consumer preferences for turkey. This was due to the fact that a search of literature provided little evidence of brand influence concerning turkeys and was, in fact, negative in terms of brand recall. Furthermore, most studies by the author had indicated that consumers rely heavily upon personal inspection of turkeys when making their preference decisions (Makens, 1960). Therefore, it was felt that

packaging which covers part of the skin area and thus prevents full inspection of the turkeys might be looked upon with disfavor by the consumer.

The following procedure was followed to test the validity of the two hypotheses. Three series of four turkeys each were placed on display during both the afternoon and evening sessions. Each turkey within a series was selected to conform to the physical appearance of each other bird within that series. Each series included two unbranded birds which were packaged in clear Cryovac, and two branded birds. One of the branded birds bore a well-known national brand and will be referred to as Omega brand. The other bore a brand that has been sold in the Detroit area for 12 years but is not sold out of the State of Michigan. This will be known as Beta brand.

The Omega brand was selected since the results of the Detroit Free Press Top Ten Brands in Detroit survey indicated that this brand was known by Detroit consumers. The other brand was not mentioned in this survey and, therefore, it was not known to what extent Detroit consumers were familiar with it prior to the panel.

The birds on display in Series I during both the afternoon and evening groups bore no price markings. However, during the afternoon panel a price premium of one-half cent per pound was given to the branded birds in Series II and a 1 cent premium to those in Series III. During the

evening panel, respective premiums of one and two cents were applied.

The theory underlying this particular procedure was that, if brand names do not positively influence consumers' preference decisions, then the two branded turkeys should rate no higher than non-branded ones when prices are equal. If brands negatively influence consumer decisions then the two branded birds would rank lower. Using this same logic it was expected that as price premiums were attached to the branded turkeys, the preference rankings would drop further.

Results

The first hypothesis was rejected on the basis of the rankings in each series. A Chi Square analysis indicated that the results of each series were highly significant at the 1 percent confidence level. In other words, an individual could be at least 99 percent confident that the results did not occur from chance or random selection. A Coefficient of Concordance statistical test was also performed upon the data. After conducting this test, the writer was able to safely infer that the results were highly significant. The original hypothesis was therefore rejected.

The second hypothesis was also rejected since a preference for a brand did occur. It was evident that consumers preferred one of the brands to all others on

display. In each series it was the presence of the Omega brand which accounted for the preference for a branded turkey. This single brand received at least 47.1 percent of the first place rankings in each series and as many as 73.5 percent in Series III of the afternoon panel (Tables 1 and 2).

The Beta brand ranked much lower and in fact was either the least preferred or next to last in all cases. As price premiums were attached to this brand it dropped to the bottom in terms of consumer preference.

Thus, it was apparent that this brand adversely affected consumer preferences. Reasons for this are not fully understood nor can they be obtained from the results of this test. However, several written comments by panel members gave some indication of their reasons for this behavior. Several comments (not statistically representative) indicate that the Beta emblem was too large and covered too large an area of the bag over the breast of the turkey thus making visual inspection difficult or impossible.

The results of this test also provided unplanned, but important information. This concerned the use of a "home state" or "home grown" appeal to consumers. In this case, the use of such an appeal did not meet with success. The Beta brand consisted of a large picture of the State of Michigan with the words "Michigan Grown Young Turkey" and could, therefore, easily be recognized as a local bird.

Table 1. Results of September, 1962, preference panel study.

Sample	AFTERNOON No. 1st Place Ratings	AFTERNOON % of First Place	Price	EVENING No. 1st Place Ratings	EVENING % of First Place
Series I					
No Brand	3	6.1	None	6	6.9
No Brand	8	16.3	"	24	27.6
Omega Brand	32	65.4	"	41	47.1
Beta Brand	6	12.2	"	16	18.4
Series II					
No Brand @ 39¢ lb.	3	6.1	39¢ lb.	12	14.1
No Brand @ 39¢ lb.	6	12.2	39¢ lb.	15	17.6
Omega Brand @ 39.5¢ lb.	35	71.5	40¢ lb.	52	61.2
Beta Brand @ 39.5¢ lb.	5	10.2	40¢ lb.	6	7.1
Series III					
No Brand @ 39¢ lb.	7	14.3	39¢ lb.	29	33.3
No Brand @ 39¢ lb.	4	8.2	39¢ lb.	12	13.8
Omega Brand @ 40¢ lb.	36	73.4	41¢ lb.	41	47.2
Beta Brand @ 40¢ lb.	2	4.1	41¢ lb.	5	5.7

Key: Omega - Well-known National Brand
Beta - Local brand sold in Detroit for 12 years

Table 2. Consumer panel rankings for branded vs. unbranded turkeys - September, 1962.

	AFTERNOON		EVENING	
	Price	% of First Place	Price	% of First Place
Series I				
Unbranded Turkeys	None	22.5	None	34.5
Branded Turkeys	None	77.5	None	65.5
Series II				
Unbranded Turkeys	39¢/lb.	18.3	39¢/lb.	31.7
Branded Turkeys	39.5¢/lb.	81.6	40¢/lb.	68.3
Series III				
Unbranded Turkeys	39¢/lb.	22.5	39¢/lb.	47.1
Branded Turkeys	40¢/lb.	77.5	41¢/lb.	52.8

Certain deductions were drawn from the results of this test and several of these then served as the basis for hypotheses in the following tests. The deductions which were drawn were as follows:

1. Consumers did not look upon all branded and unbranded turkeys of the same quality and size as homogeneous products.
2. A brand could lower consumer acceptance below what it would otherwise be for a turkey packaged in a clear bag. The reasons were not shown by this test but indications are that the brand emblem may be too large for the package.
3. A brand could increase consumer acceptance. Again, knowledge of factors which comprise a good brand were not derived from the test.
4. Reliance on home state appeal was not enough to assure consumer acceptability of turkeys.
5. The Omega brand was preferred by a majority of panel members who would pay extra for turkeys with this label.

II. Questionnaire, September, 1962

A questionnaire was given to the panel members as they completed the September panel. It was filled in and returned before they left the building (see Appendix, p.).

The questionnaire was designed to determine the following information concerning turkeys:

1. Brand recall by the panel members.
2. Grade and sex recall.
3. Opinions concerning the probable action by panel members in the market place given certain situations involving turkey brands.
4. Information concerning the size of the last Thanksgiving turkey each panel member purchased.

The information in Tables 3, 4, and 5 lists the questions which the panel members were asked and their answers to them.

The first of these tables contains a summary of the answers given to questions one and two (Table 3).

Question 1. Did you buy a turkey for last Thanksgiving (1961)?

Of the 127 consumers present for the panel, a total of 107 indicated that they had purchased a turkey for the previous Thanksgiving while only 20 stated they had not. It is important to point out that five consumers were given turkeys as gifts. Therefore, only 15 panel members or 12 percent could be considered as non-home consumers or non-users of turkey. These persons indicated they ate Thanksgiving dinner away from home, or used a substitute product for this holiday meal. It is evident that most of the panel members are home users of whole turkey. This fact tends to strengthen

the reliance which may be placed in using the panel members as a sample of turkey consumers and in the results of the panel tests.

The fact that nearly four percent of the consumers were given turkeys as gifts may have important implications regarding the importance of turkey brands. It is a customary practice in our society to present gifts that will be well received and will give the receiver an impression that the donor is a person of good taste. The validity of this statement can be demonstrated by witnessing the sale of products such as liquor during Christmas. Attractively designed bottles and specialized advertising campaigns are used to convince a special market segment, gift buyers, that here, indeed, is a gift that would be welcomed by anyone. This same type of logic might also be effectively applied in the case of turkeys if brands are meaningful to consumers or can be made meaningful. As a note of caution it must be pointed out that one cannot generalize and say that 4 percent of the home users in Detroit are given gift turkeys. Therefore, this market segment may actually be larger or smaller, yet it gives an indication of a possible number of turkeys which were sold for gifts.

Question 2. If you did, what brand did you buy?

This particular question exhibits all the pitfalls of any brand recall question. For instance, the answers may have been biased since consumers had only a few minutes

before been asked to examine and rank turkeys which bore brands. This could have aided a consumer in recalling the brand she purchased if it was represented by one of those used in the panel. It is also possible that a consumer wrote down the first brand which came to her mind even though this was not in reality the brand she had purchased. It is further conceivable that the respondent might have consciously given a different brand name. The pitfalls inherent in this question were further compounded by a time lag of nearly a year between the date in question (Thanksgiving, 1961), and the inquiry.

Nevertheless, the results provided certain useful insights into consumer brand preference. The answers which were given indicated that only a small number of the consumers (36%) were able to give a brand name. This agrees with the brand preference studies conducted by certain U. S. newspapers as given earlier in the review of literature.

It is also interesting to note that three of the respondents indicated they had purchased a Beltsville variety turkey and believed that this was a brand name. This is in accordance with findings by the Detroit Free Press (1961-62) and the Youngstown Vindicator (1962).

The data presented in Table 4 is further concerned with information recall by panel members.

Question 3. What was the approximate weight?

This question was asked so that plans could be made for a future panel study involving the actual sale of turkeys. The answers given to this question show that 51 of the consumers purchased turkeys between 8 and 14 pounds with the greatest number purchasing a 12 pound turkey. With this information in mind it was possible to determine the possible future demand for turkeys of this weight during an actual sales test.

Question 4. What was the grade?

and

Question 5. What was the sex?

These questions were similar to the brand recall questions in regard to the inherent pitfalls which they exhibit. They were included in the questionnaire as a means of determining whether consumer panel members were better able to recall grade, sex or brand name. Since there was no means of including a check, the answers can only be taken at face value with the understanding that certain limitations do exist.

It was found that 56 or 44 percent of the consumers stated that they recalled the grade as compared to 51 or 40 percent who could not remember. Therefore, more of the consumers were apparently able to recall the grade than the brand name. An even greater number, 92 or 72 percent stated they could remember the sex of the turkey they had

purchased. Therefore, these answers seem to indicate that consumers may be more conscious of the sex of the turkey than either the grade or brand as measured by their ability to recall.

Table 5 represents the findings of four opinion questions including possible buying situations which might face the respondent. Therefore, it must be recognized that by their very nature these questions also contain a number of serious limitations when used as tools in market research. However, these questions were designed so that a comparison could be made between the answers given by panel members in various tests.

Question 6. Do you intend to buy a turkey for Thanksgiving this year?

This question was included as an aid in determining the potential number of sales which could be expected during a future sales test. It was therefore encouraging to find that 104 of the panel members stated they did intend to purchase a turkey.

Question 7. If the store in which you regularly shop does not have in stock the brand of turkey you desire will you buy another brand of turkey or go to another store in search of the brand you want?

The results of this question indicated that most of the panel members, 73 percent, would be unwilling to leave

the store in which they regularly shop in search of a particular brand of turkey. Only 24 or 19 percent said they would go to another store in search of the brand they wanted.

Question 8. Would you be willing to pay extra for a turkey bearing a well-known brand name versus a turkey that appeared to be of as high a quality but which had a brand name unfamiliar to you?

Less than half of the consumers, 32 percent, said they would be willing to pay extra for a well-known brand turkey. This is apparently in direct contrast to the results of the panel ranking which these same individuals had just completed. The Omega brand was consistently ranked highest by a majority of panel members even with a price premium. What accounts for this contradiction? One explanation is quite obvious, which is simply that the Omega brand appeared to be of a higher quality in each of the series that was ranked. This difference may have been either imagined or real even though to the "specialists" who helped to establish the test all birds were alike.

A second explanation is that the respondents did not understand the question. The final question which was asked of the panel members on the questionnaire concerned the difficulty in understanding any of the questions. Although

only three persons said any of the questions were difficult to understand, it is quite possible that many more were confused but were embarrassed to admit it.

Finally, these results may need to be listed amont the many other opinion questions which market researchers have asked consumers only to find a direct contrast between what the consumer says she will do and actually does. This presents a question as to the validity of opinion questions in market research since consumers may be unwilling or totally unable to give answers which accurately reflect their future decisions.

Question 9. Would you be willing to pay extra for a turkey bearing a well-known brand name versus a turkey that appeared to be of as high a quality but which had no brand name on it?

Only 39 percent or 50 panel members stated that they would be willing to pay extra for a brand turkey in this situation. Again, these results directly conflict with the panel rankings. Therefore, the comments which were applicable with regard to Question 8 are equally so in this case.

Although a conflict in answers existed, this does not necessarily negate the results of the study. Instead it helps to eliminate those consumers who are not influenced to a large extent by brands. The question which will need to be answered through the study is not how did the majority

Table 3. Replies of panel members to purchase and brand recall questions.

	Yes	%	No	%
Did you buy a turkey for last Thanksgiving (1961)?	107	84	20	19
If you did, what brand did you buy?				
Number who listed a brand name	39			
% who listed a brand name	64%			
Number who did not list a brand name	68			
% who did not list a brand name	64%			
Brand Names				
Armour	3			
A & P	6			
Banquet	1			
Beltsville*	3			
Chef's Pride	1			
Kroger	2			
Land O Lakes	3			
McInery's	1			
Norbest	4			
Swift Butterball	13			
Wilson	1			
Wrigley's	4			

*Belstville is not a brand name but is a name for a variety of turkey.

Table 4. Replies of panel members to weight, grade and sex recall questions.

	Weight	No. who purchased this size
What was the approximate weight of the turkey you bought?	8	1
	10	4
	11	1
	12	29
	13	3
	14	13
	15	4
	16	10
	17-19	26
	20 & over	16
		107 Total

	No. that gave a grade	No. that could not remember
What was the grade of the turkey you bought?	56	51

	Hens	Toms	Can't Remember
What was the sex of the turkey you bought?	57	35	15

Table 5. Replies of panel members to questions concerning their probable actions in the market.

	Yes	%	No	%	Uncertain	%
Do you intend to buy a turkey for Thanksgiving this year?	104	82	7	5.5	16	12.5

		Number	%
If the store in which you regularly shop does not have in stock the brand of turkey you desire, will you?	a. buy another brand of turkey?	93	73.2
	or		
	b. Go to another store in search of the brand you want?	24	18.8
	or		
	c. No answer	10	7.8

		Number	%
Would you be willing to pay extra for a turkey bearing a well-known brand name versus a turkey that appeared to be of as high quality but which had a brand name unfamiliar to you?	Yes	40	31.5
	No	62	48.8
	Uncertain	25	19.6
Would you be willing to pay extra for a turkey bearing a well-known brand name versus a turkey that appeared to be of as high quality but which had no brand name on it?	Yes	50	39.3
	No	58	45.6
	Uncertain	19	13.9

vote, but instead, how much agreement was there between the results of the various tests by any individual. An answer to this question will be provided later in the study (see page 94).

III. and IV. Panel Ranking and Sale, November, 1962

After the results of the September panel study, it was decided that a panel ranking test was needed to determine the effect of brand name only upon consumer preferences for turkey. The September panel had employed the use of the entire brand and it was therefore impossible to determine the influence that brand name alone had on consumers' preferences. Many of the comments given during the September panel indicated that parts of the entire brand such as the words ready-to-cook, and tendons pulled, were important to consumers and influenced their rankings.

It was further decided that a sales test would provide a valuable check concerning the correlation between what the consumer says she will buy and then actually does purchase. Since the November panel occurred less than a week prior to Thanksgiving it was possible to plan a sales study with assurances of a fairly heavy demand for turkey.

The underlying set of six hypotheses in the construction of these tests was as follows:

1. H_o: A significant number of panel members do not prefer one well-known brand name turkey to another.

H_1: A significant number of panel members do prefer one well-known brand name turkey to another.

2. H_o: A significant number of panel members do not prefer one unknown brand name turkey to another.

H_1: A significant number of panel members do prefer one unknown brand name turkey to another.

(3-6). H_o: A significant number of panelists are not willing to select a well-known brand name turkey that is priced (two, four, six and eight cents per pound) higher than an unknown brand of comparable size and quality.

Procedure Ranking Test

The panel ranking test included five series of four turkeys each. In each of the series the turkeys were identified as having the same weights. Actually, this was fairly true since there was no more than one-half of a pound difference between any two birds. All of the turkeys used for the ranking test were selected from Michigan State University stock. The 20 birds used had been selected for uniformity from a group of 60 which had been slaughtered, dressed and drawn by graduate students and technicians at Michigan State University. After the 20 selected birds were drawn they were placed in a large tank of water and were then randomly removed. The birds were packaged in bags representing two well-known national brands and two unknown

brands. The known brands included the Omega brand and a brand which will be referred to as Gamma. The bags which were selected to represent unknown brands were not sold in Detroit and will be called Sigma and Rho. All of the bags were mixed and piled so that an Omega bag would be drawn, then a Gamma and so on until all 20 had been filled. The bags were sealed and shrunk at a uniform time and temperature.

Since this test involved brand name only, several modifications were made on the bags after the turkeys were packaged. Using a chemical solvent, Acetone (CH_3COCH_3), certain words were removed from the bags. These included the words, "Broad Breasted," "Hen," "No Trussing Needed," "Oven Ready" and "Quick Frozen." Roasting instructions were also removed since not all the bags included this information. Thawing instructions were left intact since all bags exhibited these. Each of the bags exhibited a federal inspection seal but not all had a federal grade label. No solvent could be found to completely remove this seal without injuring the package. A tape was therefore placed over these labels and a similar tape was placed in a corresponding location on the bags which exhibited no label. Through this procedure, the bags were made as uniform as possible without damaging the brand name.

Each of the series included turkeys which represented the four previously mentioned brands. Series I had no price differentiatial attached to any of the birds. However,

in each of the remaining series, the Omega and Gamma brands (known brands) were priced above the unknown brands. These included two, four, six and eight cent per pound margins. A sign was placed in front of each display which indicated both the price per pound and the total price per turkey. A top price of 39¢ per pound was always given to the well-known brands. Price reductions were then given to the other two brands. As an example, with a two cent price difference, the unknown brands each were assigned a price of 37¢ per pound. This system of pricing was used for three reasons: first, prices which end in an odd number are widely used by retail merchants (Maynard, and Beckman, 1946). Second, it was necessary to use four dollars ($4.00) as a top price since this conformed with the accompanying sales test, and third, Detroit food stores were selling turkeys within this price range during the week that the panel was held. Advertisements in the Friday, November 16, 1962, issue of the Detroit Free Press showed that turkeys of similar weight and grade were selling at the following prices per pound in these Detroit retail grocery stores: Food Fair Markets, 38¢ lb.; Wrigley's, 39¢ lb.; Kroger's, 39¢ lb.

Procedure - Sale

It has been previously mentioned that a sale accompanied the ranking test but details concerning the procedure were not given. This sale was open to all panel

members but was held on a voluntary basis. The transaction involved no exchange of money since the cost of the turkey which a panel member selected was deducted from the amount she would otherwise have received for participating in the panel. Each member would have been given four dollars for participating and therefore the consumers who selected a well-known brand received no change. Those who selected an unknown brand were sent a check for either forty-three (43¢) or sixty-four cents (64¢) in change. This amount depended upon the price of the unknown brand turkeys.

A refrigerated case was used to hold four turkeys of the various brands on display during the panel meeting. The prices which were attached to the turkeys corresponded with those in Series 3 and 4. The well-known brands sold at a four or six cent per pound premium over the unknown brands. The particular premium which was attached depended upon the demand for turkeys of a particular brand. If the demand for unknown brand turkeys was great then the price differential was decreased and vice versa. In this way, the quantities of different brand turkeys which were offered for sale could be manipulated.

There was one difference between the turkeys which were offered for sale and those on display which were ranked. The Omega and Gamma brands which were sold were not from University stock because permission was not granted

by these two companies to package other birds in their bags. Again all excess wording was removed from the bags leaving the brand name.

Results of Panel Ranking Test

Throughout the five series it was apparent that the participants preferred the Omega brand name to all others on display. In only one series the Omega bird was not preferred. This occurred in Series 3 in which a four cent premium was attached to this brand. This may be explained by the presence of a bird of superior appearance which was covered by the Sigma brand bag. This occurred even though birds were originally selected for conformity. It was obvious to the research technicians that this bird did emerge as superior in appearance to the others in that series. Since the series was established, it was too late to regroup or replace the bird in question with one that more nearly equalled the appearance of the other turkeys.

It is obvious from the results that this was the case since 6 and 8 cent price differentials which were associated with the Omega brand, resulted in a majority selection by panel members for this bird. Therefore, it seems illogical to assume that a consumer would be willing to pay a two, six, and eight cent premium for this brand but not a four cent premium.

The data in Table 6 showed that the Omega brand received as many as 68 percent of the first place rankings at a premium of six cents per pound. It therefore was the presence of this brand that accounted for the largest part of the preference for known brands as reflected in Table 7.

Table 6. Panel member's rankings of turkeys, November, 1962.

Cents per lb. Premium for Known Brands	Brand	Number of First Place Ratings	Percent of First Place Ratings
Series I - No Price	Gamma	17	10.12
	Sigma	31	18.45
	Rho	12	7.14
	Omega	108	64.29
		168	
Series II - 2¢ premium/lb.*	Gamma	22	13.01
	Sigma	59	34.91
	Rho	18	10.65
	Omega	70	41.43
		169	
Series III - 4¢ premium/lb.*	Gamma	22	12.94
	Sigma	68	40.00
	Rho	18	10.58
	Omega	62	36.48
		170	
Series IV - 6¢ premium/lb.*	Gamma	15	8.83
	Sigma	15	8.83
	Rho	24	14.11
	Omega	116	68.23
		170	
Series V - 8¢ premium/lb.*	Gamma	22	12.94
	Sigma	26	15.29
	Rho	21	12.35
	Omega	101	59.42
		170	

*Omega and Gamma Brands were priced higher than Sigma and Rho. Omega and Gamma priced alike and Sigma and Rho were given similar prices.

Table 7. Percent of known brand turkeys selected during November, 1962, ranking test.

Cents/lb. premium for Known Brand	% of Known Brands Selected
No Price Difference	74.41
2¢ premium	54.43
4¢ premium	49.42
6¢ premium	77.06
8¢ premium	72.36

These results further provide evidence that consumers place much emphasis upon personal inspection when selecting turkeys.

A Correlation Coefficient Analysis yielded results which were significant for each series at the 99 percent level. This indicates that one can be 99 percent confident that the selections did not occur as a result of random selection. However, it does not indicate which individual results were statistically significnat nor does it either validate or invalidate any hypothesis. A Chi Square analysis was used to test the set of hypotheses. An example and explanation of the statistical computation can be found on page 117 of the appendix.

The results of the statistical computation are listed in Table 8. The Omega brand was significantly preferred to the Gamma brand in all series. Therefore, the null hypothesis that panel members do not prefer one well-known brand name turkey to another was rejected. The second

null hypothesis was rejected in four of the five series since the panel members preferred the Sigma brand turkey to the Rho brand. The reason for this is not known. However, certain conclusions can be drawn due to the research procedure which was used. Both brands were equally unknown to Detroit consumers. Therefore it is doubtful that the panel members placed more reliance on one brand name than another. Moreover, both turkeys were of the same weight and appearance. The possibility that there were differences in the turkeys in all five series can also be dismissed. This process of elimination then leaves the package as the most likely factor which influenced the preference of the panel members. At this point there is insufficient evidence to conclude further what caused the participants to prefer one unknown brand to the other. Since both turkeys were packaged in the same manner, it is most probable that the brand name, coloring and design were more attractive to the panel members. The Gamma brand was packaged in Cryovac bags and the Rho brand used Saran bags. It should be noted, however, that the Omega brand was also printed on Saran bags and yet it ranked the highest. Therefore, it is logical to assume that the two packaging materials used had a neutral effect on consumer preference.

All but one of the null hypotheses (Nos. 3-6) concerning the willingness of panel members to pay extra for a brand name were rejected. A significant number of panel

members preferred the Omega brand to all others except when a four cent premium was attached as explained earlier.

It was felt that further analysis was necessary to determine if the panel members were consistent in regard to brand preferences. If a consumer chose a well-known brand as her first selection, would she also select one as her second choice? At the same time, would a consumer who preferred an unknown brand to all others also select an unknown as her second choice?

Therefore, a brand preference scale was devised which took into consideration the various placings possible during the November test. These amounted to 24 permutations of which only eight could be considered as being consistent. Therefore, a panel member would have been consistent in regard to a preference for two well-known brands by four different placings and in regard to preference for unknown brands by the same number. A list of the four different consistent placings favoring known brands is shown in Table 9. A consistency in favor of unknown brands was simply the reverse of that shown in Table 9.

To complete the analysis, a known brand turkey was given a value of three and an unknown brand was assigned a value of two. Therefore, if a consumer placed known brand turkeys as her first and second choices, she would receive a score of six. If two unknown brand turkeys were placed in these positions the score of four would be given. A

Table 8. Chi Square analysis for November, 1962, panel.

Formula $X^2 = \frac{2 \Sigma (X - M)^2}{X}$

Pairs Tested	Series I	Series II	Series III	Series IV	Series V
Rho vs. Gamma	15.22**	4.64	1.36	13.2**	10.88*
Omega vs. Gamma	106.66**	69.34**	46.4**	128.4**	117.64**
Omega vs. Sigma	74.92**	8.84*	9.40*	127.2**	76.50**
Omega vs. Rho	124.56**	44.22**	60.90**	104.68**	86.2**
Sigma vs. Gamma	20.42**	22.26**	44.08**	4.0	4.16
Sigma vs. Rho	14.76**	30.56**	61.80**	4.14	15.58**
Brand Preferred in Each Pair					
Rho vs. Gamma	Gamma	--	--	Gamma	Gamma
Omega vs. Gamma	Omega	Omega	Omega	Omega	Omega
Omega vs. Sigma	Omega	Omega	Sigma	Omega	Omega
Omega vs. Rho	Omega	Omega	Omega	Omega	Omega
Sigma vs. Gamma	Sigma	Sigma	Sigma	--	--
Sigma vs. Rho	Sigma	Sigma	Sigma	--	Sigma

*Significant at .05 alpha level.
**Significant at .01 alpha level (highly significant).
--Indicates non-significance between a pair
Omega and Gamma-known brands.
Sigma and Rho-unknown brands.

A score of five would always indicate an inconsistency between first and second place ratings.

Table 9. The four possible permutations favoring known brands.

	First Choice	Second Choice	Third Choice	Fourth Choice
1	Omega	Gamma	Sigma	Rho
2	Omega	Gamma	Rho	Sigma
3	Gamma	Omega	Rho	Sigma
4	Gamma	Omega	Sigma	Rho

Omega and Gamma - known brands.
Rho and Sigma - unknown brands.

This method of scoring indicated that 124 persons (75%) of the consumers were inconsistent in their placings. That is, they selected a known and an unknown brand as their first and second choices. Only 29 consumers (17%) selected a known brand as both first and second choices in three out of five series or 60 percent of the time. A total of only four consumers (8%), consistently selected an unknown brand during three of the five series (Table 10).

These data indicate that the largest percentage of panel members did not base both their first and second choices on brand names. They also indicate that most consumers will not select all known brands over unknown ones nor will many consumers consistently discriminate

against known brands. The important point is that a certain small number of consumers appear to be highly brand conscious. At the same time there is a small group which is not brand conscious and are seldom, if ever, willing to pay extra for a known brand. This will be covered in more detail in pages 93 through 94.

Table 10. Consistency between first and second placings of known and unknown brands.

	No. & % of Persons Selecting this combination	
A Known Brand Selected as First and Second Choice	No.	%
5 series out of 5 (100%)	13	7.7
4 series out of 5 (80%)	8	4.7
3 series out of 5 (60%)	8	4.7
Total 60% or more	29	17.1
An Unknown Brand Selected as First and Second Choice		
5 series out of 5 (100%)	3	1.7
4 series out of 5 (80%)	8	4.7
3 series out of 5 (60%)	3	1.7
Total 60% or more	14	8.1
Inconsistency between First and Second Choice		
5 series out of 5 (100%)	31	18.5
4 series out of 5 (80%)	40	23.5
3 series out of 5 (60%)	28	16.7
Total 60% or more	99	59.1
Mixture of Placings 3 out of 5 Unlike		
3 series out of 5 unlike	25	14.9
	167	100.0%

Results of Sale

One of the most significant features of the outcome of the turkey sale was that it worked as planned. Throughout the entire panel there were always four turkeys of different brands for sale. In other words, each panel member could always select from among the four brands. This is an important point since there were a limited number of turkeys of each brand. If, for example, all the Gamma birds had been sold during the first part of the sale, then consumers could have selected among only three brands. This did not occur since the technician overseeing the sale had the ability to fluctuate prices. If it appeared to him that the unknown brands were selling too fast and the supply was dwindling, he could then lower the premium for known brands from six cents to four cents and thus encourage their sale. The reverse procedure was used to encourage the sale of unknown brands.

Since there were always four different brand birds of equal size and quality for sale, the validity of the results is strengthened. The data clearly indicates that the bulk of the panel members selected the Omega brand. In fact, turkeys of this brand outsold any other brand four to one. Moreover, the majority of these were sold at a price premium of four cents (Table 11).

After combining the sales results for both of the well-known brands it was evident that the majority (68.41%)

of the consumers were willing to pay extra for birds bearing these brands. This thereby provided a gain of $18.21 for the well known brands over what the returns would have been had all the turkeys been priced the same (Table 12).

Table 11. Brands purchased during November, 1962, Detroit Preference Panel Sale.

	Number of birds sold with different price premiums attached to known brands			
	4 cents	6 cents	Total of 4 & 6 cents	%
Gamma	3	2	5	12.9
Sigma	5	1	6	15.3
Rho	2	4	6	15.3
Omega	21	1	22	56.5
	31	8	39	100.0

% of well-known brands sold 68.41%

% of unknown brands sold 31.56%

Omega and Gamma - Known brands

Sigma and Rho - Unknown brands

The question which now requires an answer is, "How many of the panel members were consistent between what they said they would buy as reflected by rankings and what they actually purchased?

The answer to this is that 18 of the 39 participants who purchased turkeys were inconsistent. Of these 18, a total of 12 persons bought a well-known brand

even though they selected an unknown brand in Series 3 of the ranking test. This means that only 6 individuals purchased a less expensive turkey during the sale than the one they had selected during the panel ranking test.

Table 12. Comparison of November, 1962, and February, 1963, panel studies.

Brand Name	Percent selected at price differential			
	November 2¢ plus for known brands	February 2¢ plus for unknown brands	November 6¢ plus for known brands	February 6¢ plus for unknown brands
Gamma	13.01	20.2	8.83	17.7
Sigma	34.91	19.6	8.83	7.7
Rho	10.65	3.9	14.11	5.1
Omega	41.42	56.3	68.23	69.5
Known brands	54.43	76.5	77.06	87.2
Unknown brands	45.57	23.5	22.94	12.8

Limitations

The primary limitation to the use of the results from the sales test is that they cannot be directly used for prediction. Unfortunately, one cannot look at Table 11 and then bluntly state that X percent of the Detroit consumers are willing to pay four cents per pound extra for well-known brand names or even for the two brands tested. The number of persons who purchased turkeys was

too small to represent a reliable sample. Moreover, the panel situation, although near to reality, was still far different from an actual sale in a supermarket.

A further limitation to both the ranking and sales test lies in the fact that price differentials were arrived at by a subtraction from 39¢ rather than adding to this figure.

It is also possible that the panel members did not wish to be concerned with cashing a check for 48 or 66 cents.

Results

The results of the panel study indicate that consumers are positively influenced by a well-known brand name, even to the point of paying a premium for this brand. It also demonstrated that there is a difference between consumer preference for two well-known brands and between two unknown brands. That is, two brands may be equally as unknown to consumers with identical birds packaged in each, yet one brand may achieve a higher preference rating than the other. The reasons are unknown.

V. Panel Ranking - February, 1963

After the results of the November panel, it was suggested by colleagues that the well-known brands had ranked high due to the price premium attachments. This

logic was based on the observation that high quality is normally associated with higher prices. It was therefore suggested that it might have been the higher price rather than brands or brand names which had caused the panel members to select well-known brands.

This hypothesis was somewhat invalidated by the fact that the Omega brand had consistently ranked higher than all other brands with no price attachments. However, it was felt that more evidence was necessary before this new hypothesis could be either rejected or accepted. Therefore, a panel ranking test was planned for the February panel which would be exactly opposite of the previous test held in November. In other words, the unknown brands were given price premiums and the known brands were displayed at lower prices. Unfortunately, only two of the previous series could again be used intact. At least one of the birds in each of the other series was damaged enough during transport to render it useless for a second test. In many cases, the bags were ripped and consequently the skin of the birds had either been torn or had changed color sufficiently to limit use of these turkeys.

As a result only two complete series could be used. These were the series which employed two and six cent price differentials. Therefore, during the February panel test the turkeys with well-known brands were given a two and a six cent price reduction under the unknown brands.

Results

In both series, the well-known brands gained in the number of first place ratings and the unknown brands lost. With a two cent reduction for the known brands, a total of 76.4 percent were selected as first choices. This constitutes a gain of 22 percent over the results of the November panel. In short, 22 percent more panel members were enticed to select the known brands when the price was lowered (Table 13).

An increase was also noted in the number of first place ratings when price tags were reversed at the six cent level. In this case, approximately ten percent more consumers selected the known brands.

It is, therefore, apparent that an increase in price did not cause the panel members to look with increased favor upon the unknown brands. Instead, the opposite reaction occurred. This is precisely the reaction one would normally expect since a casual observation of merchandising techniques indicated that when prices are lowered on brand name goods a larger than normal quantity is sold. In the case of the February panel test, it appears as though this is exactly what happened.

It is well to mention, however, that certain other factors could have influenced the particular rankings during this test. Since the Sigma and Rho brands had been displayed

in the previous panel, they were not unfamiliar to all the consumers. It is, therefore, necessary to look more closely at the individual results to determine the degree of correlation between the selections during the November and February panels.

It has previously been stated that 153 panel members participated in the February test. A total of 124 had previously acted as participants during the November study. The remaining 29 had never seen the turkeys which were on display.

VI. Taste Test - February, 1963

By the time of the February, 1963, panel, it had already been fairly well determined that the consumers participating in the Detroit panels were influenced by brands and brand names. It also had been established that the Omega brand was generally preferred to all others studied.

Therefore, a new type of test was designed to determine if an individual's preferences for a brand is strong enough to influence his decision regarding the taste of cooked turkey. Although this test represents a first in market research involving turkeys it is by no means a new concept. The Institute of Design Analysis in San Francisco has performed similar tests involving different brands of beer. In these tests, the problem was, "How do you establish -

if it's true, that package design itself, absent of other considerations actually influences consumer purchases?"

Using a "semantic differential technique," the Institute found that by changing labels on various brands of beer they could also change the results of consumer taste tests. Thus, the Institute concluded that ". . . it is the label, particularly at the time of consumption, which changes or confirms the flavor image of the brand in the mind of the consumer" (anonymous, Printer's Ink, 1962).

Procedure - Taste Test I

Consumers were shown two plates with equal size samples of turkey meat on each. Behind each plate was a cardboard box which was covered with a turkey bag in such a manner that the brand on the bag was prominent. One box was covered with an Omega brand bag and the other with an unknown brand bag which will be referred to as Delta. The Delta brand was selected since it was unknown to Detroit consumers. This brand is used by a California processor and is not sold in the Detroit area.

The panel members were told that the samples of meat on the plates were taken from turkeys of the brands represented by the bags behind the plates. Actually, all of the samples were taken from the breast of one and the same bird. The panel members were asked to taste a sample from each plate, compare the taste and texture and then rank

each sample on a semantic scale which was printed on their cards. This scale was designed in the following order: Excellent, Good, Fair, Poor, and Bad. None of the adjectives used was given a numerical rating at the time of scoring by the panel participants. After the two samples were ranked, the consumers were then asked to indicate which they preferred or if both tasted the same to them.

During the afternoon panel, the samples identified as having been taken from an Omega brand turkey were tasted first but during the evening session the order was reversed. This was done to eliminate any bias which might occur as a result of one sample being tasted prior to the other.

Method of Analysis - Taste Test I

It was necessary to assign a value to each of the adjectives before any statistical computations could be applied. The word Excellent was given a value of 5, Good was assigned a value of 4, Fair 3, Poor 2, and Bad was given a rating of 1. The statistical method employed was the Wilcoxon Matched-Pairs Signed Ranks Test as given by Siegel (1956). This methodology is non-parametric and designed particularly for use in the behavioral sciences (see Appendix, p. 118).

An hypothesis was established that the panel members would give the sample identified as Omega a significantly higher ranking than the one marked Delta. It was further

assumed that this difference would be significant at the 1 percent level.

Results of Taste Test I

During all of the panel studies conducted at Wayne State University the members were urged to write comments in a space provided. Although these comments cannot be interpreted as being statistically significant they do clearly point out that even though consumers were tasting identical samples of meat, they nevertheless perceived differences of quality in their own minds. These comments, therefore, tended to strengthen the results since they indicated it was not merely a haphazard and hurried scoring done by disgruntled participants which caused the results to evolve as they did. Instead, the scorings were apparently based on a rationale which affected even the consumers' perceived sense of taste.

The following is a list of these written comments. Those in favor of the Delta sample were:[1]

1. Delta seemed a little more moist.
2. The Delta is more moist, smoother and more tender.
3. Delta has a "blander" turkey taste - excellent.
4. Both of the turkeys were very good but the texture of the Delta was nicer

[1]The panel members used the brand names rather than Omega or Delta.

5. The Delta sample seemed more moist but it is hard to judge a turkey by such a small piece.
6. Delta is juicier.
7. The Delta sample was more tender.
8. I liked them both but I think the Delta was more tender.
9. The Omega was not quite as tender as the Delta.
10. Omega was drier.
11. Delta was more moist.

The comments in favor of the Omega brand were:

1. I prefer the Omega as it is not too dry.
2. Omega much better - Delta too dry.
3. Omega not so dry.
4. Delta turkey has a sourness about it.
5. The Omega was not quite so dry.
6. I am probably influenced by brand name. The Delta seemed drier.
7. Omega not as dry as other. Has better flavor, too.
8. I think the Omega has a very slight edge over the Delta brand.
9. The Omega is more tender.
10. The Omega is a little juicier.
11. The Delta too dry.
12. Delta tastes like fish.
13. Delta a little dry. Omega very juicy.
14. Delta had very little taste at all.

15. Omega seemed more moist and easier to chew.

16. The Omega turkey seemed a bit more tender.

17. Delta sample tasted dry and flat.

After reading these comments one would expect that the two samples representing different brands would receive different ratings and that is precisely what happened.

After the results were analyzed statistically it was found that the rankings in favor of the Delta had a T value of 2133 as compared to a T value for the Omega brand of 4183. A value was then obtained and it was found that the results were significant at the .01 level. Thus, the semantic ranking test indicated that consumers were influenced by the well-known brand even though both samples of meat were identical.

This was further strengthened by the results of the section of the test in which the panel members gave an answer reflecting their ordinal utility; i.e., they were asked to merely state a preference for one over the other without considering the amount of preference (cardinal utility) for one over the other. Here again, the Omega brand was preferred, as shown in Table 13. Out of a total of 150 replies which were given during the afternoon and evening panels, only 15 individuals (10%) indicated that both the samples tasted alike. Fifty-one (34%) of the respondents indicated that they preferred the samples identified as the Delta and 84 (56%) indicated they preferred those marked as Omega.

Table 13. Preference for turkey meat samples by panel members.

Which sample did you prefer?	Number
Delta	51
Omega	84
Both the same	15
	150

Key: Omega - well-known brand; Delta - unknown brand.

Procedure Taste Test II

A second and additional taste test was used during the afternoon panel. It was, however, discontinued during the evening panel due to a shortage of researchers to aid with the test and an increase in the number of panel members.

This test was designed to study consumers' reactions to a sample of meat from properly processed and cooked turkey versus samples from an obviously tough turkey. It was felt that consumers who had previously exhibited a high degree of brand awareness and influence in their preference decisions would indicate that the tough sample had been taken from an unknown brand turkey and vice versa.

The samples were cut from two individual turkeys. One turkey had been processed and cooked according to recommended standards. The other turkey had been slaughtered, dressed and drawn and then placed in an oven to cook.

This was done so that the turkey would not complete the resulting process of rigormortis before the meat was cooked. This was successful since a Warner-Bratzler shear test of like samples from both turkeys indicated a shear value of 6 for the turkey which was properly prepared and a shear value of 12 for the other bird. Thus, the meat from one turkey was half as tender as that from the other based on the shear test.

During the panel, the samples from the two turkeys were placed on separate plates. Each plate bore one type-written symbol (% or *) to identify it. The panel members were given one sample from each plate and were asked to compare them and then state which they preferred. The sample identified as % exhibited a shear value of 6 as compared to a shear value of 12 for the one marked *. The panel members were not given this information.

The participants were also asked to state whether they believed the sample marked % came from an Omega brand, a Delta brand, or if they could even guess from which it came. They were also asked to do the same for the sample identified by the sample marked *. Figure 1 demonstrates the procedure although not necessarily the particular brand used. A null hypothesis was then established as follows:

H_o: Panel members will not significantly prefer either sample.

Figure 1. A student demonstrating the procedure followed by consumers during taste tests. (Not necessarily representative of brands used.)

H_1: Panel member will significantly prefer one sample to the other.

Results

The data in Table 14 shows that the sample identified as % (better quality sample) was preferred by 49 of the 61 respondents. This constitutes a majority preference of 80 percent as compared to 7 percent (4 persons) who stated that they preferred the sample marked *. The remaining 8 panel members gave no reply. The results of a Chi Square Analysis showed that the preference for sample % was highly significant. It is obvious that the panel members were able to detect a quality difference between the two samples as had been planned and the null hypothesis was therefore rejected.

Table 14. Preferences for tough and tender turkey meat by panel members and association with brands.

	Samples %	*	Neither	Total
Number of persons who preferred the sample	49	4	8	61
Number of persons who said the sample was Omega (preferred Omega)	31	3	-	34
Number who said the sample was Delta (preferred Delta)	17	1	-	18
Number who did not indicate which brand sample was from (no preference)	1	-	-	1

Key: Omega - well-known national brand; Delta - unknown brand.
% - Shear value of 6.
* - Shear value of 12.

The data presented in Table 14 also shows that thirty-one or 63 percent of the consumers, who preferred this sample, stated that they believed it came from an Omega brand turkey. As previously mentioned, four panel members stated a preference for the sample marked as *. Three of these persons stated that they believed this sample came from an Omega turkey. A total of 34 participants stated a preference for the Omega turkey and 18 indicated they preferred the Delta brand.

In summary, these data indicate that a significant number of consumers preferred the sample with a shear value of 6 to that with a value of 12 and that a majority of these persons believed this sample had been taken from an Omega brand turkey.

Limitations

1. Unlike beer and cigarettes, the brand of turkeys is not normally before consumers at the time of consumption and might be known only to the purchaser and/or cook. Therefore, unless those eating the turkey were told that the meat they were being served is a certain brand it is improbable that their sense of taste would be influenced. This then is a different situation from cigarettes or beer since with these products it is usually impossible to use the product without being confronted with the brand.

2. The second taste test followed immediately the one involving semantic scoring. It is, therefore, possible that the sequence of testing may have affected the results to a certain degree. As an example, a consumer who had previously shown a high degree of brand preference in other panel tests might find that for some unexplained reason the sample identified as Delta tasted superior to her in the first taste test. It is conceivable that she might state that the poor quality turkey sample in the second taste test was an Omega based on her taste experience only a few minutes before. Remarks by two consumers indicate that this did occur. The following remarks showed these responses:

"I have used Omega and liked it but I like Delta better."

"I was amazed because I always buy Omega but this new one seemed even tastier."

3. It is virtually impossible to cut two identical sizes of turkey meat for samples. Moreover, it is possible that one sample was drier than another. Only a few samples were placed on each plate at any one time. Yet, a consumer might have been given a fresh sample from one plate versus one from the other plate which had been exposed to the air for 10 to 15 minutes.

VII. Panel Ranking and Sale, April, 1963

By the time of the April panel test several deductions had been reached concerning the influence of turkey brands on consumers' preferences. It was also felt that enough use had been made of the brands which had been previously used.

Therefore, a sale and panel ranking test was planned which would employ new brands. A sale test was possible since the date of the panel correlated closely with the arrival of Easter and therefore a greater number of purchases of turkey would be probable.

During the November panel ranking and sale test two different sets of turkeys had been used. Since this represented a possibility for the introduction of bias, the April test was planned so that birds from the same source could be used for ranking and the sale. It was therefore necessary to have all turkeys processed by one firm. It was also necessary to receive permission from the companies supplying bags for this study and the United States Department of Agriculture to use bags with Federal Inspection Seals in this manner. Permission was received from all groups concerned.[1]

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[1]U.S.D.A. approval given by Mr. R. J. Lee, Head, Poultry Products Section Inspection Branch, Poultry Division, in a letter to the writer dated March 1, 1963.

Nearly 30 letters were sent to out-of-state processors requesting bags which would be unknown to consumers. Unfortunately, none were willing to cooperate and therefore the Sigma and Delta brands were used. A well-known turkey marketing firm furnished bags with their brand. This brand had not been previously displayed and will be called Kappa. A Detroit turkey marketing firm also provided bags with their company's brand which had not been previously used during the panel. This brand will be referred to as Zeta. The reluctance on the part of many firms to cooperate in this study may be explained by the nature of the test.

The branded bags supplied by the four firms were given to the Lowenstein Poultry and Game Company who then used them to package birds of equal size and weight.

Throughout the afternoon panel group, two series of the four different brand birds were on display. In Series I the Zeta and Kappa brand turkeys were given a four cent per pound premium over the unknown brands (Sigma and Delta). In Series II this procedure was reversed. This allowed the technician supervising the sale to adjust the prices of the various brands in favor of one set of brands over another without affecting future analysis of the correlation between sales and panel results.

During the evening panel group it was impossible to maintain a series of the four brands since the turkeys from one of the brands had been sold. It was therefore necessary

to use only one series during the evening. This was regulated to match the brands on sale.

Since it was necessary to use the Sigma and Delta brands the purpose of the test had to be changed. The original plan to test a known national brand and a known local brand versus two unknown brands was no longer possible. The purpose now was to determine if consumers would select the four brands in an order other than random even though all turkeys were of the same weight and from the same lot. Therefore, a null hypothesis was established that:

H_o: Panel members will rank the four turkeys equally.

H_1: Panel members will not rank the turkeys equally.

The only ranking series which could be used to test this null hypothesis were those which were used during the afternoon section.

Results of Panel

The Coefficient of Concordance test showed that the results were statistically significant at the 99 percent confidence level for both series. This means that one can be 99 percent confident that the results did not occur as a matter of random selection.

In both series, the Zeta brand rated lowest (see Tables 15 and 16). The Kappa brand also ranked low. It is interesting to note that the Sigma and Delta brands ranked

Table 15. Results of afternoon section of April, 1963, panel ranking test.

Brand	Price	No. First Rankings	% First Place Rankings
Series I			
Sigma	35¢/lb.	17	28.81
Delta	35¢/lb.	23	38.99
Kappa	39¢/lb.	13	22.03
Zeta	39¢/lb.	6	10.17
Series II			
Sigma	39¢/lb.	23	38.34
Delta	39¢/lb.	16	26.66
Kappa	35¢/lb.	13	21.67
Zeta	35¢/lb.	8	13.33

high in both series. The two brands which are sold in the Detroit area did not rate high in the panel members' opinions even though the opposing brands are not sold in that market. The data in Table 16 show that neither of the brands which are sold in the Detroit market rated higher than the other two brands in any of the tests. It must be remembered, however, that these brands were not entirely

Table 16. Results of Chi Square analysis - afternoon, April, 1963.

Pairs Tested	Series I 4¢/lb. premium for known brands	Series II 4¢/lb. premium for unknown brands
Sigma vs. Delta	1.82	1.92
Sigma vs. Kappa	13.00**	16.36**
Sigma vs. Zeta	37.50**	31.48**
Delta vs. Zeta	53.40**	28.50**
Delta vs. Kappa	24.64**	15.20**
Kappa vs. Zeta	9.04*	6.56

	Brand Preferred in Each Pair			
	Brand	Type	Brand	Type
Sigma vs. Delta	--	--	--	--
Sigma vs. Kappa	Sigma	Unknown	Sigma	Unknown
Sigma vs. Zeta	Sigma	Unknown	Sigma	Unknown
Delta vs. Zeta	Delta	Unknown	Delta	Unknown
Delta vs. Kappa	Delta	Unknown	Delta	Unknown
Kappa vs. Zeta	Kappa	Known	--	Known

Key: *Significant at .05 level.
**Significant at .01 level.
--Indicates non-significance.
Sigma & Delta - unknown brands (not sold in Detroit market).
Kappa & Zeta - known brands (sold in Detroit market).

new to the bulk of the panel members since they had been displayed in other panel tests. Nevertheless, all birds were identical and varied only as to the brand label.

It is also important to recall that both of the "unknown" brands had been compared to the Omega brand in earlier tests and it was found that the Omega (known brand) was preferred. However, one of these same unknown brands (Delta) was also found to be preferred to a second well-known brand tested earlier (Gamma). It therefore appears that this unknown brand exhibits some unknown consumer appeal factor. It may be equally as true that the two well-known national brands (Gamma and Kappa) which were compared to this brand exhibit some common factor which has negative consumer appeal. The most obvious guess is the color since both brands employed a great deal of green in their brands. This is, little more than a guess and should be viewed only as a possible factor to explore in future market research.

Results of Sale

There were 25 turkeys sold to participants during the panel. The Sigma brand was sold out before any of the others; thus, leaving only three brands from which the remaining panel members could select. This is contrary to the results of the November sale and therefore the figures giving the amount of each brand sold in Table 17 do not reflect true demand by panel members.

Table 17. Brands purchased during April, 1963, panel sale.

Brand	Number Sold	Percent
Kappa	8	32.0
Sigma	6	24.0
Delta	5	20.0
Zeta	6	24.0
Total	25	100.0%

The results do, however, indicate that 19 of the 26 buyers, selected a turkey of the same price as the one they had preferred during the ranking test. Thus, there was a 73 percent price agreement between the sale and the panel ranking test. There was, however, much less agreement between the exact brand that a panel member indicated she would buy and the one she did purchase. Only nine of the participants purchased the same brand during the sale as they had selected as their first choice.

VIII. A Test to Measure Utility - April, 1963

At this point in the study it was felt that a completely new test was needed. The results of each previous test had been quite consistent but were giving rather standardized answers. Therefore, a new test was needed to provide data which would hopefully indicate more accurately

the extent of market segments for a premium priced turkey with a well-known brand.

Again a search of the literature concerning market research techniques failed to provide a method that would be usable with the existing limitations on time and resources. However, an article by Friedman and Savage (1948) did provide a model based on the theory of utility which was used as a starting point and guide line.

The concept of utility played a heavy role in the construction of this test and it is, therefore, well to briefly examine it. Schaffer (1959) defines utility as "the usefulness or satisfaction of a good or service to a consumer." The entire concept is then built upon the assumption that an individual attempts to maximize total utility. Utility is measured in terms of utils the same as time is measured in terms of minutes and hours. Although this concept has been widely used by economists to explain consumer behavior it has seldom been measured.

This test attempts to measure utility and may therefore be looked upon as an effort to bring the world of abstraction into the world of practicability. The transformation is not an easy one and is therefore subject to certain limitations and pitfalls which will be mentioned later.

Two other concepts were also used in this test. These are the rationality of consumers and indifference

theory. Throughout this test the consumer was assumed to act in a rational manner. Now precisely what does this mean? If we say that a consumer is rational only when he seeks to maximize his money resources then the use of this definition can lead only to more questions. It is impossible to say whether consumers were actually considering the maximization of dollars when the Omega brand was selected in earlier tests. It is possible they might have felt there would be less waste with an Omega brand bird and were therefore willing to pay extra for this brand even though an alternative turkey weighed the same yet sold for less. It is also possible that the Omega brand turkey was selected because it might taste better or because a higher degree of status was associated with this brand. Neither of the latter two reasons would fuflill the requirements for rational action if rationality implies the maximization of money resources only.

Moreover, it was not the purpose of this test to determine why a consumer acts as she does but rather how she acts. Therefore, the following definition of rationality was used as given by Edwards (1954). Rationality "means that the consumer can weakly order the states into which he can get, and he makes his choices so as to maximize something." This definition serves the purpose of this test well since it indicates that a consumer is rational in his behavior so long as his actions help to satisfy some need.

This may be the need to attain status, to obtain economy, to fulfill some physiological drive, or to satisfy any number of other needs.

The concept of indifference is based on the assumption that a consumer can make an ordinal decision; that is, he can say, "I prefer this alternative to that one." The theory of utility, on the other hand, states that a consumer can indicate how much more he prefers one alternative to another and therefore employs a cardinal measurement. This test was designed to determine both ordinal and cardinal measurements in the following manner.

Two metal trays were filled with chipped ice and a turkey was placed in each. These turkeys were uniform in appearance and weight but were packaged with differently branded bags. One bag was that of the Omega brand and the other represented the Sigma brand. A pair of one dollar bills were then placed next to the well-known brand. This display was identified as Display I. The other tray containing the unknown brand was labeled Display II. The Omega bird was identified by the typewritten symbol *, the two dollars by the symbol #, and the Sigma brand was marked as %. Consumers were told that each of the turkeys weighed the same and that the present market price of turkeys of this weight was four dollars. See Figure 2.

Each panel member was given a card as shown on p. 124 of the appendix. They were then asked to indicate

Figure 2. Example of displays used in tests to determine utility. (Not necessarily representative of brands used.)

which of the three items on display would be their first, second and third selections if awarded their choice as a prize. Here then was an ordinal measurement since it involved only a choice among three alternatives.

This part of the test was designed to show quickly the number of consumers who were willing to accept two dollars rather than a turkey worth twice this much. In this way, the non-consumers of turkeys could be separated from those who use turkey. This had been a criticism of previous tests in this study since the rankings of individuals who do not use turkey were given as much validity as those who do. The results of this section also showed which consumers preferred the name brand turkey to the unknown brand turkey.

After ranking the two turkeys and the money, the participants were asked to indicate on their cards what they would do under certain conditions in each of eleven different fictitious stores. The instructions given were as follows: "Assume that you have been awarded a prize and can pick it up in a food store. Now there are eleven different food stores and in each store there are two display units as you see here. We would like for you to indicate on your cards, from which display you would take your gift in each of the eleven stores. Be careful to notice that your chances of receiving the two dollars instead of the Omega turkey increase as you enter different stores. As an

example, in the first store you would always receive an Omega brand turkey from Display I, but in the second store you have one chance in ten of instead receiving the two dollars. You would always receive a Sigma brand turkey from Display II in each of the eleven stores."

This was the section involving cardinal measurements and therefore the part which was the most difficult to conduct. The entire procedure was pre-tested prior to its use with the Detroit Preference Panel. A group of nearly 40 secretaries and student wives participated during the pre-test. The results indicated certain weaknesses in the presentation which were corrected. However, they also showed that the test could be understood and the instructions correctly followed by the majority of the group. This test was used during the April, 1963, Detroit Preference Panel.

Statistical Analysis and Results

After the April panel was completed, the test cards were separated according to the consistency of the replies. Those which were inconsistent or incomplete numbered 28 (17%) out of a total of 158 and were disregarded leaving a total of 130 usable cards.

The inconsistent replies were of two types. The first was composed of the cards on which an individual had indicated a preference for a particular sample during the ranking section but then completely reversed her decision

during the section involving chance. The second grouping consisted of those who had shown an illogical pattern during the test involving chance alone. As an example, an individual might have been willing to select from the first display in stores 7 and 9 but not in store 8. It was assumed that the inconsistent replies indicated that these consumers did not understand the directions.

Since this test was designed to measure utility it was then necessary to assign a value in utils to the unknown brand turkey (the control) and to the money. Each util was given the monetary value of one cent. Therefore, the Sigma brand turkey was worth 400 utils which corresponded with its market value of four dollars. The two dollars were given a value of 200 utils. A study by Edwards (1955) indicated that the utility of money is fairly linearly related to its dollar value over a range of money from -$5.50 to $5.50. Since this is the case, one util can be said to equal one cent.

After the utility of these two constants were determined, the utility of the Omega brand turkey was calculated by using the concept of expected utility as follows:

Utility of Sigma brand turkey = probability of the utility of the Omega brand turkey
minus (1 - p) Utility of $2.00

Using this formula, the utility of the Omega turkey was determined for each of the points at which a consumer

would no longer take her prize from Display I but would switch to Display II. The first point to be measured was the midway at which the chances of receiving an Omega turkey or money were equal. In this case, a consumer would take her prize from the first display in stores one through six but would then switch to the second display in stores seven. There were eleven of the panel members whose utility for the Omega bird was determined as follows:

$$400 = .5u \text{ of Omega} + .5(200) \quad \text{therefore}$$

$$\text{Utility of Omega} = \frac{400}{.5} - \frac{.5}{.5(200)} = 600$$

Thus, the cardinal utility of the well-known brand turkey was determined to be 600 utils for these eleven consumers.

The equations for stores one through six are represented in Table 18, as well as the number of consumers in each category.

Thirty-one consumers stated that they would prefer the known brand to the unknown one but would be unwilling to assume any risk to acquire this brand.

The consumers who preferred Display II over Display I in store one evidently felt they could obtain less utility from the well-known brand than from the unknown brand turkey. These consumers preferred the Omega turkey over the $2.00 and therefore the utility of this turkey must be less than

Table 18. Calculation of utility for the known brand turkey.

Display I in:	Formula	
Store 1 not Store 2	$400 = 1.0 + 1.0\ (200)$	
	$\text{U Omega} = \frac{400}{1} - \frac{.0}{1.0\ (200)}$	$= 400$
Store 2 not Store 3	$400 = .9 + .1\ (200)$	
	$\text{U Omega} = \frac{400}{.9} - \frac{.1}{.9\ (200)}$	$= 422$
Store 3 not Store 4	$400 = .8 + .2\ (200)$	
	$\text{U Omega} = \frac{400}{.8} - \frac{.2}{.8\ (200)}$	$= 450$
Store 4 not Store 5	$400 = .7 + .3\ (200)$	
	$\text{U Omega} = \frac{400}{.7} - \frac{.3}{.7\ (200)}$	$= 486$
Store 5 not Store 6	$400 = .6 + .4\ (200)$	
	$\text{U Omega} = \frac{400}{.6} - \frac{.6}{.6\ (200)}$	$= 533$
Store 6 not Store 7	$400 = .5 + .5\ (200)$	
	$\text{U Omega} = \frac{400}{.5} - \frac{.5}{.5\ (200)}$	$= 600$

400 utils but more than 200. There were 42 panelists in this category. This information is included in Table 19 along with a list of the number of consumers who demonstrated that the Omega turkey was worth different amounts of utils to them.

The data in Table 19 shows that nine individuals preferred the $2.00 to the Omega turkey. It is obvious that

this turkey was worth less than 200 utils to these persons.

Table 19. Number of panelists and their indirect evaluation of the value of the well-known brand turkey to them in utils.

Number of utils for well-known brand	Number of consumers giving this as maximum utility of well-known brand turkey	Cumulative number of consumers at each utility evaluation
Potential Turkey Consumers		
600	11	11
533	5	16
486	13	24
450	13	42
422	2	44
400	31	75
Unknown but more than Sigma brand turkey	4	79
Less than 400 but more than 200	42	121
Less than 200 for well-known brand but more than 200 for unknown brand	3	124
Non-Potential Consumers		
Less than 200 for both turkeys	6	130

At the opposite extreme were four consumers who preferred the Omega turkey to the $2.00 and at the same time preferred the $2.00 to the Sigma brand turkey in all eleven

stores. These four consumers were evidently highly brand conscious.

Most of the replies, however, were between these two extremes. There were 11 consumers who indirectly gave their evaluation of the utility of the Omega brand turkey as 600 utils or 200 utils more than the Sigma brand. Five consumers gave 533 as their evaluation of the utility of the Omega turkey while 13 panelists indirectly said their evaluation was 486 and a similar number evaluated the utility at 450. Only two consumers gave an evaluation of 422 but 31 gave 400 as their utility.

It can be seen (Table 19) that 44 out of 126 panelists were willing to give up something (a chance for a lesser valued prize) to receive the Omega rather than the Sigma turkey. It can, therefore, be assumed they were willing to pay extra to obtain this turkey. The amount they were willing to pay extra is the amount of utils above 400 since one util is equal to one cent.

It has previously been mentioned that the null hypothesis was, "that potential turkey consumers are not willing to pay more for a well-known brand than for an unknown one." Since potential turkey consumers were defined as those who would prefer a turkey over two dollars, six of the 130 panel members did not meet this requirement. These were the numbers who stated they would prefer the two dollars to either turkey. All other panel members were

included thus giving a total sample population of 124. Of these 124 persons, only 45 preferred the Sigma turkey to the Omega one. Therefore, 79 panelists preferred the Omega brand turkey to the Sigma brand.

The test of the hypothesis was then conducted as follows:

H_o: Potential turkey consumers do not have a preference for either the Omega or the Sigma brand turkey.

H_1: Potential turkey consumers will prefer either the Omega or the Sigma brand turkey.

The alpha level was set at .05 and a Chi Square (X^2) test was selected as the statistical method to test the hypothesis.

The 95 percent confidence level for this statistic with 1 degree of freedom is 3.84 and therefore the null hypothesis was rejected since a value of 9.3 was obtained.

The second hypothesis tested was:

H_o: Three fourths of the potential turkey consumers will not pay more for the Omega turkey than for the Sigma brand.

H_1: One fourth of the potential turkey consumers will pay more for the Omega brand than for the Sigma brand.

It will be remembered that previous work at the Detroit Preference Panel had demonstrated that at least one

fourth of the panel members had indicated a willingness to pay extra for this particular well-known brand turkey.

The data in Table 20 shows that 48 panelists indirectly indicated they would pay extra for this well-known brand. These were the eleven consumers at 600, the five at 533, 13 at 486, 13 at 450 and two at 422. In addition, there were four persons whose exact utility is unknown. It was, however, greater than that for the unknown turkey. This left a total of 76 potential turkey consumers who would not pay extra for a well-known brand.

Table 20. Amount extra that panel members indicated (indirectly) they would pay for Omega turkey.

Amount Extra/bird	Cents Extra/lb.	No. of Total Sample Population	Percent of Population of 124
2.00	20.0	11	8.9
1.33	13.3	5	4.0
.86	8.6	13	10.48
.50	5.0	13	10.48
.22	2.2	2	1.61
Market price	none	31	25.00
Premium not known but is more than for unknown brand		4	3.22

Again the alpha level was set at .05 and the X^2 test was used. This resulted in a value of 12.4 since the Chi

Square value at the 95 percent level with one degree of freedom is 3.84, the null hypothesis could be rejected.

It is therefore evident that at least one fourth of the potential turkey consumers were willing to pay extra for this well-known brand turkey.

IX. An Adaptation of Utility Test

The first test to measure utility had been successful but it was still felt that this test was too restrictive in its use due to the complexity involved. Therefore, a modification of this test was designed and tested. Since the regular Detroit Preference Panel was not held during the summer months it was necessary to use a new group of consumers.

The 36th Annual Conference of Michigan Homemakers was held on Michigan State University campus during July and a panel was included as part of the program. This panel was similar to those held in Detroit and was therefore used for this test.

During the panel, four trays were filled with chipped ice and a turkey was placed in each. These turkeys were identical in weight and appearance but were packaged in differently branded bags. The panel members were told that turkeys of this weight were presently selling for $4.00. Two of the bags bore an Omega brand and the other two were packaged in Sigma and Rho bags. The trays were then identified as Series I through IV. This test did not involve a

display with money. Instead, the panel members were directly asked whether they would prefer the turkey in front of them or various denominations of money.

Each participant was given four cards, one for each turkey. They were instructed to mark on each card whether they would rather have the corresponding turkey or a certain sum of money. There were 13 different amounts of money which ranged from two dollars to six dollars. The panel member was told to mark each of the 13 alternatives (see appendix, pp. 132 and 133). A check for money at any level indicated that the panelist would prefer that amount of money to the turkey. A mark for the turkey indicated that the panelist preferred the turkey over the amount of money listed for the same store.

Two of the cards increased in amount from the top of the card to the bottom while the choices listed on the other two cards decreased in value. This was done to avoid bias due to procedure. One of each of these types of cards was used for the unknown and the known brand turkeys.

As in the previous test to determine utility, a similar null hypothesis was tested. This was:

H_o: Potential turkey consumers do not have a preference for either the Omega or the unknown brand turkeys.

H_1: Potential turkey consumers will prefer either the Omega or the unknown brand turkeys.

A second hypothesis was formed concerning the number of consumers willing to pay extra for the Omega brand bird. The null hypothesis was:

H_o: Seventy-five percent (75%) of the potential turkey consumers are unwilling to pay extra for an Omega brand turkey.

H_1: Twenty-five percent (25%) or more of the potential turkey consumers are willing to pay extra for an Omega brand turkey.

Analysis and Results

A total of 97 consumers were given cards for this test. Upon analyzing the results, it was found that 20 of these persons were evidently confused regarding what they were to do. In addition, one member returned only one-half of her cards thus giving a total of 77.5 consumers. Several left their cards blank or checked only one alternative. The results from these individuals were therefore discarded.

Each of the remaining cards was then analyzed and the last point at which a consumer was willing to take a turkey instead of money was recorded in terms of the amount of money the individual was willing to forego. As an example, if $4.25 was the highest point at which the alternative was money or an Omega turkey, and the Omega turkey was checked, then the sum of $4.25 was recorded for this turkey. Since the particpants knew that turkeys of

this weight were worth $4.00 on the market, it was apparent that the consumer was willing to forego an additional 25 cents to obtain this turkey. If this same panelist preferred the Sigma turkey to $3.75 but not to $4.00, then $3.75 was recorded for the Sigma turkey. Once these figures were listed, they were statistically tested in the exact manner as the data from the earlier Taste Test I. This involved the use of the Wilcoxon Matched-Pairs Signed Ranks Test as given on page 118 of this study (Siegel, 1956).

The Wilcoxon test utilized information about the direction and the magnitude of the differences within the pairs of observation for the Omega and Sigma turkeys for that consumer. Thus, a + $.50 ($4.25 - 3.75) would be recorded for this panelist. If preferences for both the Omega and Sigma turkeys are equivalent one would expect to find some of the larger differences favoring the Omega turkey and some favoring the Sigma turkey. But if the sum of the ranks of the differences which have a positive sign (indicating Omega is preferred over Sigma by that amount of money), is much different from the sum of the negative ranks, one would infer that the preference between the two brands of turkeys is different. This test gave a Z value of 3.8 which proved that the results were significant at an alpha level of .01 (Siegel, 1956).

Therefore, the null hypothesis that consumers are not willing to pay more for one turkey than for another can be rejected.

The next step in the analysis of this data also followed the previous test. Again a Chi Square test was used and again the null hypothesis was rejected, thus indicating that 25 percent of the consumers were willing to pay extra for an Omega brand turkey. Since each panel member evaluated two pairs of known and unknown brands, it was necessary to multiply the number of participants whose cards were retained (77.5) by the number two. This then gave a figure of 155 as the total sample population. This figure was employed in the Chi Square analysis.

It can be seen in Table 21 that slightly more than 37 percent of the sample population indicated they were willing to pay at least 25 cents per bird extra for the Omega turkey. This amounts to a premium of 2.5 cents per pound. Twenty-five percent of this population indicated they would pay a premium of five cents a pount (50 cents per bird). Seventeen percent were willing to pay 7.5 cents per pound extra, 13 percent indicated they would pay 10 cents, 7 percent were willing to pay 15 cents, 3.8 percent would pay 17.5 cents, 2.6 percent would pay 20 cents and less than 1 percent would pay 35 cents extra.

The results also indicate that an additional 14.8 percent or 23 persons indicated they were willing to pay extra for the unknown brand turkey. This provides evidence that more than 50 percent of the potential consumers of turkey were willing to pay at least a 2.5 cent per

pound premium for a turkey they considered to be of superior quality.

Table 21. Amount extra that panel members would be willing to pay for a well-known brand.

Amount	% Utility Test I	% Adaptation
$ 3.50	--	.67
2.00	8.90	2.66
1.75	--	4.00
1.50	--	7.33
1.33	12.90	--
1.00	--	14.00
.86	19.35	--
.75	--	18.00
.50	33.48	26.00
.25	--	38.66
.22	35.48	--
Market Price	60.48	84.67
Would buy unknown brand	39.52	15.33

A regression analysis was also performed upon the data for the known and the unknown brand turkeys. The analysis was conducted to determine the relationship between the price per turkey and the number of panelists willing to take the turkey at that price.

The independent variable was the price per turkey. The dependent variable was the number of panelists who would forego the different amounts of money to receive a particular turkey.

The regression analysis on the data concerning the panelists preference for an unknown turkey employed the use of a statistical formula $Yc = a + bx$ as given by Croxton and Cowden (1955). This equation is a statement of the way in which the dependent variable changes with variations in the independent variable and thus shows the relationship between these variables. The use of this equation yielded results as follows: $Yc = 85.83 - .541x$. The symbol a refers to the value of Yc when $x = 0$ in the previously given equation. Therefore, in this equation the value of Yc when $x = 0$ is 85.83. The symbol b refers to the slope of the estimating equation. Therefore, the value of -.541 indicates that if the price of the unknown brand is increased by ten cents, the number of panelists willing to take this brand will decrease by 5.41 persons.

In addition a coefficient of correlation was determined and is referred to as the symbol r which was found to be .931. This figure is a measure of the degree of relationship or correlation (r) between the variables. The square of the measure (r^2) yielded a figure of .867. This demonstrates the relative amount of variation in the dependent variable which was explained by the estimating equation. In this case, the r^2 value indicates that approximately 87% of the variance in the results of the number of panelists willing to take the unknown brand turkey is explained by changes in the price per turkey.

A similar regression analysis was run on the data for the Omega turkey which yielded the following: Yc = 83.08 - .527. In this case, 85% of the variance in the number of panelists willing to take the Omega turkey is explained by changes in the price per turkey. The b value indicates that a ten cent increase in the price per turkey (1 cent per lb.) will decrease the number of consumers willing to take the Omega turkey by 5.27 persons. This is equivalent to 3.4% fewer consumers who would take the Omega turkey at this price. This was determined by dividing 5.27 by 155 (the number of panelists).

An estimated regression line for this brand turkey was also drawn as shown by Figure 3. This line is an approximate demand curve for the Omega brand turkey since it indicates the number of consumers who were willing to take this bird at each price.

It should be noted that the slopes of the two approximate demand curves are nearly identical (-.541 for the unknown brand, -.527 for the Omega). In other words, the approximate demand curves are nearly parallel. The difference between the two curves lies in the fact that the approximate demand curve for the Omega turkey lies above the demand curve for the unknown turkey at all points. The amount of this difference is due to the preference for the Omega turkey over the unknown turkey. This can be assumed since the only difference between the two brands was the package and not the

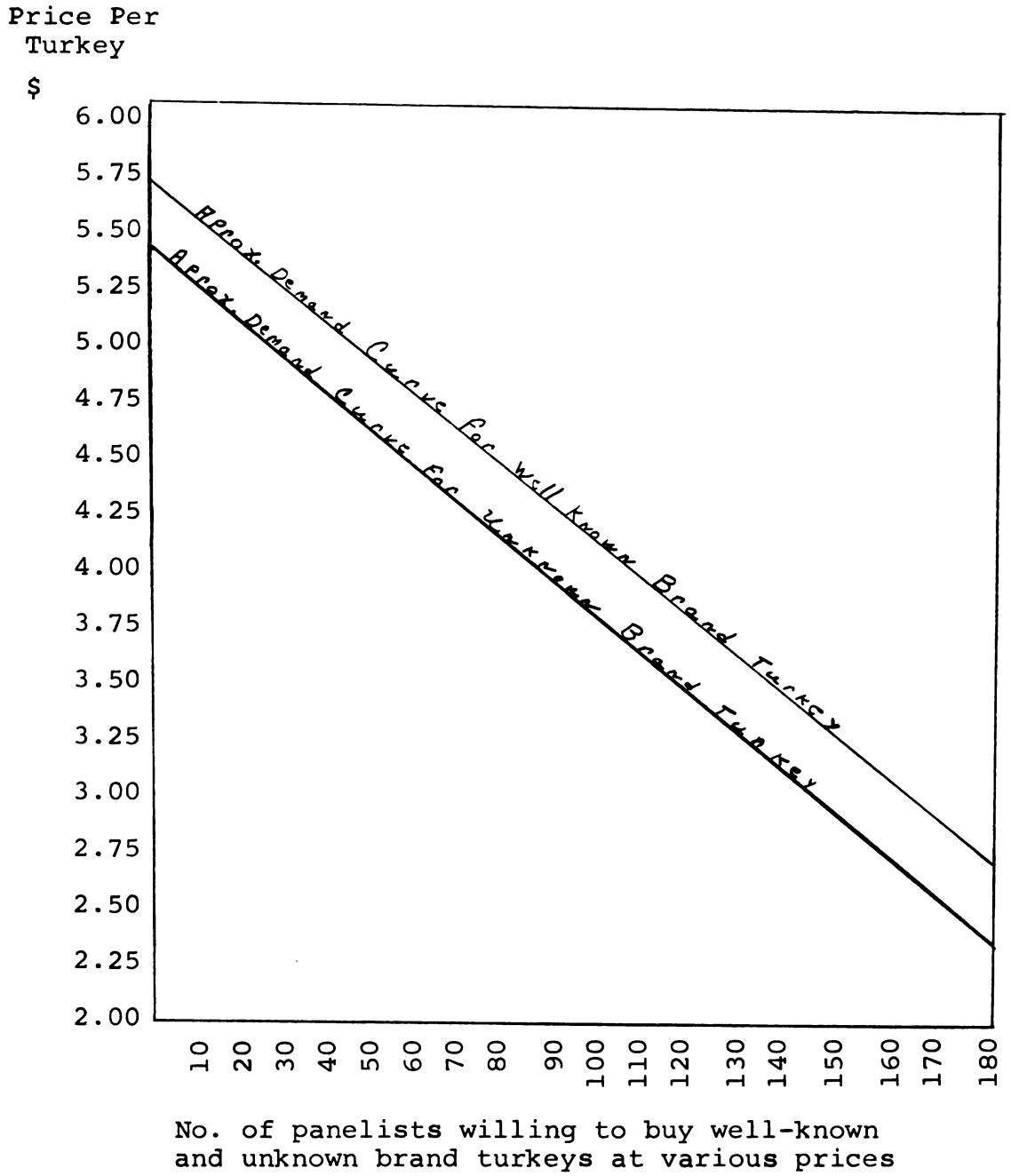

Figure 3. Approximate demand curves for well-known and unknown brand turkeys as derived from regression analysis.

bird. Therefore, the difference must be due to a preference for the Omega turkey over the unknown one.

Comparison between Utility Test I and Adaptation

The test produced close results in terms of the percentage of participants who indicated they would pay extra for a well-known brand turkey. The results were also close concerning the percentages who would pay various extra amounts.

It is interesting to note that the results of the July test, an adaptation of the earlier and more complex test, shows that a higher percent of consumers were confused by the latter test. This may have been due to the fact that none of the members during July had ever participated in these panels before. These persons also received fewer instructions than the normal panel and their cards were not checked for completeness before they left the panel. This is regularly done at the Detroit panel. Moreover, the last group of women received fewer instructions than the first group during the July panel. This was also evident when the results were analyzed as a much larger number of these consumers apparently misunderstood the procedure than those who had participated just prior to them.

This clearly points out that both tests necessitate that the panel members be given clear instructions prior

Table 22. Amount of money panel members indicated they would forfeit to receive an Omega turkey.

Amount	Number of Replies	Cumu-lative	% of Total Potential Turkey Consumers	Cumulative %
0*	74	155	47.74	85.14*
.25	19	58	12.25	37.40
.50	12	39	7.74	25.15
.75	6	27	3.87	17.41
1.00	10	21	6.45	13.54
1.50	5	11	3.23	7.09
1.75	2	6	1.29	3.86
2.00	3	4	1.93	2.57
3.50	1	1	.64	.64

*Would take either turkey at market price.

Table 23. Amount of money panel members indicated they would forfeit to receive an unknown brand turkey.

Amount	Number of Replies	Cumu-lative	% of Total Potential Turkey Consumers	Cumulative %
0*	73	153	47.74	62.56*
.25	8	23	5.16	14.82
.50	4	15	2.58	9.66
.75	3	11	1.93	7.08
1.00	2	8	1.29	5.15
1.25	2	6	1.29	3.86
1.50	1	4	.64	2.57
1.75	3	3	1.93	1.93
2.00	-	-		
3.50	-	-		

*Would take either turkey at market price - one less number for unknown brand turkey due to use of 1/2 result from a panel member.

to the test. It is therefore necessary to have trained researchers present to explain the procedure.

X. Analysis of Total Panel Results

Procedure

The results of each test conducted during the study had provided a similarity in results but the extent of agreement between the answers given by any individual was still not known. It was therefore necessary to code and record the first place ratings given by each person. In addition, the results of the questionnaire, sales tests and taste tests were recorded for each participant. It was then possible to determine the extent of agreement between the answers given by any person during the panels she had been present.

A binomial test, as given by Siegel (1956), was employed to determine significance between an individual's answers. See appendix, page 134.

Results

A total of 270 different panel members participated throughout the four panel sessions. Forty-four of these persons attended all four panels. Those attending three sessions numbered 53 while 75 attended two panel meetings. The remaining 98 persons participated only once.

The results of the binomial test showed that 57 out of 270 consumers were significantly consistent at the .05 level in the answers they gave. Only two of these or 7 percent consistently marked their cards in a manner to indicate that they were not influenced by well-known brands. The remaining 55 persons (20.37%) consistently selected turkeys with well-known brands.

Ten of these individuals had purchased a turkey during the November sale and two of them had purchased an unknown brand even though they were considered to be brand conscious consumers through the binomial test. These two persons were eliminated giving a new total of 53 brand conscious consumers or 19.6 percent.

The data in Table 24 show the percentage of men and women who participated in the panel tests. Approximately 30 percent of the participants were male and neither sex was significantly more brand conscious than the other.

Chi Square analyses were performed to determine if the panel members who were consistently brand conscious also differed from the entire panel group in other respects. It could be seen from these mathematical tests that at the .05 level there was no difference between the two groups in respect to size of family, income and consumption of turkey.

It is apparent from the over-all analysis of the results that most of the consumers do not consistently select either well-known or unknown brands. It appears that the

bulk of these consumers did not select turkeys on the basis of brand alone.

Table 24. Percent of men and women who were consistently brand conscious during panels.

	Total No. Present	Percent	No. Brand Conscious	Theoretical Expected No.
Men	82	30.38	17	16
Women	188	69.62	36	37
Total	270	100.00	53	53

DISCUSSION

Perhaps the most useful question which should be asked after the completion of any market research study is simply, "so what?" Many studies are often left only partially completed since they present only a list of the findings and give little or no attention to the value of the finding to the field of marketing. This section will therefore be devoted to answering the question, "so what?"

It is obvious from this study that brands do affect consumer purchase decisions both positively and negatively. It is less obvious why a particular brand either detracts from or adds to consumer appeal. The knowledge that brands exert both positive and negative buying appeal is, however, valuable in itself. The fact that a branded turkey ranks no higher and sometimes lower than a non-branded one in the minds of consumers is indeed a serious marketing problem.

Since brands of turkeys compete not only among themselves but with other food products as well for a share of the consumer's dollar, it is essential for these brands to appeal to consumers. Today it is all too common to find turkeys with broken bags and torn and dried skin prominently displayed in the frozen food counter. It is logical to

assume that turkeys with unattractive brands might be the most prone to exhibit these characteristics although no research has been conducted in this area. Certainly many other factors are involved but the fact that certain brands are unattractive and least preferred by consumers should cause them to be purchased last. If this is the case, then turkeys with these brands are subject to far more handling by consumers and their packages are more likely to tear. A rapid turnover of turkeys lends itself to improved merchandising and sales appeal. Slow moving items benefit only an individual's competition.

Therefore, it appears that many firms should re-examine their particular brand in terms of its consumer appeal. It does not take a trained observer to see that turkey brands represent nearly every color of the rainbow, are of many sizes, and include many designs. Certainly, not all colors are appropriate for turkeys nor are all designs. It must be remembered that the package is a company's silent salesman. It is doubtful that these same companies would continue to keep a salesman who was unable to sell and who misrepresented the product and the company. Yet, these same concerns continue to use brands which detract from or at least do not add to the sales of their product.

The design and promotion of a successful brand is no simple matter and should be done with the aid of trained individuals. The reader is again reminded of the warning

of Dr. R. R. Dince (1962), that "investing in a brand name may be as expensive as building a new plant." Since this is the case, it may very well be that a "Sunkist" program is necessary which would incorporate many small firms which are unable to successfully promote a brand alone.

The discussion thus far has centered on the negative aspect of turkey brands. However, the fact that this study showed that a brand can be a positive factor in turkey merchandising is of primary importance and therefore represents the real value of the study.

Based on observation one can see that turkeys are presently merchandised and priced primarily according to weight, and sex and only in limited cases according to brand. This is not the case for a multitude of other commodities including such homogeneous products as sugar and salt. This negligence of brands allows the turkey marketer virtually no market control. If the market price of turkeys decreases then so too does the price for all brands if one is not differentiated from the other. It is doubtful that a brand could ever completely differentiate one turkey from another to a point where the price of one brand turkey is completely independent of another in the minds of many consumers; however, some degree of differentiation can be achieved.

Since the study indicated that approximately 20-35 percent of the turkey consumers were willing to pay extra for a particular brand, it is evident that product differentiation does occur.

This information is of importance not only to a firm which markets turkeys but to the advertising industry as well. It indicates that a market segment does exist which consists of individuals who are willing to pay a premium for certain brands if these turkeys are thought to be of a higher quality. It might then be practical for a turkey marketing firm to select the better turkeys it handles and package them under a brand name designed to appeal to this segment. A firm would then need to establish two brands or sell the lower quality stock to a competing firm. Unless this separation took place a firm could not expect to maintain sales to this market segment, which is willing to pay a premium.

Brands are also important to the firm that does not wish to compete in a premium price market. A firm that sells to the bulk of the turkey consumers can profit through greater consumer acceptance as reflected by increased sales. This in turn increases the desired demand on the part of food stores for a particular brand. Again the results of this study strengthen this logic since a majority of consumers were positively influenced in their purchase decisions by the presence of one particular brand.

The level to which a firm can actively pursue either course of brand promotion depends directly upon the cost of advertising, and sales promotion and can be judged only by the firm itself. The results of this study unfortunately do not indicate what amount of expenditure is necessary to build a successful brand.

Correspondence between the author and various newspapers indicated that the importance of turkey brands has been overlooked in the past due to the seasonal demand for turkeys. It was felt that most consumers simply could not remember a particular turkey brand for a full year. There is considerable evidence to indicate this is true but this does not lessen the need for brands which add to consumer acceptance. Instead, it increases the need for a re-examination of many turkey brands by marketing firms since the brand and the package take on increased importance as silent salesmen in the display counter. This re-examination should be conducted by trained individuals in the field of market research and not left to the judgment of executives who are experienced in other fields. The author's personal experience has shown that turkey brands are often based upon the likes or dislikes of certain company executives and their opinions of what will influence consumer decision. It is equally as important for a company to use the right brand for the right product. This study clearly demonstrated that a well-known brand which is used for other meat products

was rejected by consumers of turkey. It is doubtful that a consumer has the same image of pork sausage or wieners as she does for a turkey and therefore colors and designs which add to the sales appeal for sausage may detract from turkey. It therefore appears that it is not enough to depend upon company name alone when selling various commodities.

The results of this study may very well have as much importance to the now emerging frozen broiler industry as they do to the turkey industry. The frozen broiler industry is still in its infancy and can therefore learn from the mistakes of the turkey industry. It would be wise for leaders of the new industry to place top priority on a program to create and perpetuate effective brands and brand promotion.

In the final analysis it must be admitted that this study has left many questions concerning turkey brands totally unanswered. It is also possible that a turkey marketing firm could look upon this study and then state that they were already familiar with the results. However, it is hoped that this study will ignite a new spark of interest within the turkey industry which will lead to a reappraisal of the value of many brands now on the market and the advertising, promotion and merchandising behind them.

The value of brands to the marketing of not only turkeys but also many agricultural products has been overlooked due to the complexities involved. Professor Kohls (1955),

stated that "product differentiation in agricultural marketing has on occasion been de-emphasized because effective branding of farm products themselves is very difficult." The results of this study have shown that differentiation is difficult to achieve as witnessed by the low perference for two well-known national turkey brands and for two local brands including one which had been sold in Detroit for 12 years. Nevertheless, differentiation is possible and brands can be effectively employed to the advantage of the marketer as the extremely high preference for one brand demonstrates that rewards lie ahead for the firm that overcomes the difficulties inherent in branding. It may be equally as true that serious problems are waiting for firms that overlook the importance of brands in today's competition for a share of the consumers' food dollar.

Many studies result in an enrichment of the research techniques of their particular fields. It is hoped that this study will also add to the storehouse of useful market research techniques. A new technique for determining the extent of various price premium, market segments was developed and used for this study. This technique should, with further refinements, take its place as a useful tool to better gauge the extent of market segments without the use of expensive and time consuming market tests. Today,

many products fail for a variety of reasons; one is a miscalculation of the parameters of market segments. This new technique although far from perfect, should offer a marketing firm the chance to avoid certain costly miscalculations. The future acceptance or rejection of this technique by market researchers will provide a means to evaluate the worth of both the technique and this study.

SUMMARY OF RESULTS

1. Consumers do not look upon all turkeys of the same grade and size as homogeneous products.
   (a) One of the well-known brands was usually selected by a majority of the panel members as their first choice.
   (b) A branded turkey which is sold in the Detroit market ranked lower than unbranded turkeys.
2. Reliance upon a home state appeal was not enough to assure consumer preference for turkeys. It is questionable to what extent this affects consumer preference but it is possible that this message could have a negative effect since a brand using this appeal ranked very low.
3. Approximately 5 percent of the consumers believed that Beltsville is a brand name.
4. One of the well-known brands consistently outranked and outsold others.
5. All well-known brands do not have the same consumer appeal. Turkeys bearing labels of two well-known firms were not preferred in the same degree. One ranked above all other brands tested. The other consistently ranked low, even below an unknown brand.

6. Approximately 20-35 percent of the potential turkey consumers were willing to pay a premium for a particular well-known brand. As many as 33 percent appear to be willing to pay five cents per pound extra for this brand over turkeys of similar size and quality that were packaged in bags representing other brands.
7. A significant number of consumers associated tender turkey meat with a well-known brand and tougher meat with an unknown brand turkey.
8. A significant number of consumers stated they preferred samples of turkey meat identified as having been taken from a well-known brand turkey to those identified as taken from an unknown brand. All samples were from the breast of the same turkey.
9. Several brands presently sold in the Detroit market did not rank as high as some of the brands not sold in this market.
10. Personal inspection of the turkey appears to be an important factor in consumer selection of turkeys.
11. The eye appeal of the entire brand appears to be a very important factor in consumer selection of turkeys.
12. There was no difference between men and women in their choices of the brands.
13. A total of 19.6 percent of the panel members consistently selected a well-known brand turkey throughout the panel tests.

14. The majority of the consumers did not consistently select a turkey on the basis of brand alone. These persons were evidently greatly influenced by personal inspection including the appearance of the turkey and the package.
15. Written comments by consumers indicate that a brand label may be too large and thus cover too extensive an area of the breast. Other comments indicate that cooking and thawing instructions and the words "tendons pulled" are positive factors which contribute to preference for one brand over another.

BIBLIOGRAPHY

BIBLIOGRAPHY

Alexander, R. S., 1960. Marketing Definitions. Compiled by the American Marketing Association Committee on Definitions. pp. 9-10.

Anonymous, 1962. Does the Label Change the Taste? Printer's Ink. 278:(1), pp. 55-57.

Bodurtha, J., 1962. The Custom Farms Story. Feedstuffs. 34:940), pp. 41-42.

Cheskin, L., 1962. How the Package Sells the Product. Poultry Processing and Marketing. 68:(10), pp. 8-9.

Croxton, F. E., and F. J. Cowden, 1955. Applied General Statistics, Second Edition. Prentice Hall, Inc., Englewood Cliffs, New Jersey. pp. 531-560, 681-693, 752-753.

Dince, R. R., 1962. Business Topics. Broiler Business. 13:(8), pp. 6.

Du Pont de Nemours & Co. E.J., 1959. Today's Buying Decisions. 6th Du Pont Consumer Buying Habits Study. E. I. Du Pont de Nemours & Co., Inc., Wilmington, Delaware - Film Department. A-12240, pp. 6-7.

Edwards, Ward, 1954. The Theory of Decision Making. Psychological Bulletin. 51:(4), pp. 213.

Edwards, Ward, 1955. The Prediction of Decisions Among Bets. Journal of Experimental Psychology. 50:(30), pp. 213.

Friedman, M., and L. J. Savage, 1948. The Utility of Choices Involving Risk. The Journal of Political Economy. 56:(4), pp. 279-304.

Hoyt, C. C. and L. E. Dawson, 1960. The Influence of Multiple Dozen Cartons, Brand and Display on Egg Sales. Poultry Science. 39:(6), pp. 1458.

Johnson, G., 1963. In-Plant Packaging, Brand Names, Keys to Broiler Marketing Success. Poultry and Eggs Weekly. 43:(17), pp. 22.

Kohls, R. L., 1955. Marketing of Agricultural Products. The Macmillan Company, First Edition, pp. 101-108.

Larzelere, H. E. and R. D. Gibb, 1956. Consumers' Opinion of Quality in Pork Chops. Michigan State University Quality Bulletin. Agricultural Experiment Station Article 39-33. 39:(2), 327-329.

Makens, J. C., 1960. An Evaluation of Mandatory Grade and Sex Labeling of Turkeys. Thesis for the Degree M.S., Michigan State University, pp. 28, 37, 41.

Maynard, H. H., and T. N. Beckman, 1946. Principles of Marketing, Fourth Edition, The Ronald Press Company, New York, p. 590.

Mountney, G. J., R. E. Bronson and H. V. Courtenay, 1959. Preference of Chain Food Store Shoppers in Buying Chicken. Texas Agricultural Experiment Station Bulletin MP-348. pp. 6, 7.

Shaffer, J. D., 1960. Consumer Purchase Decision and Demand. Mimeograph handout of material for unpublished book. pp. 8-6.

Siegel, S., 1956. Non-parametric Statistics for the Behavioral Sciences. McGraw-Hill Book Company, Inc., pp. 1-17, 36-41, 75-81, 229-237.

Newspaper Studies (1961-63):

The Charlotte Observer & News, 1962-63. Top Ten Brands in Charlotte, North Carolina. 5th Annual Consumers Inventory, p. 37.

The Detroit Free Press, 1961-62. Top Ten Brands in Detroit, Michigan. 2nd Annual Consumer Inventory, p. 34.

The Indianapolis Star & News, 1962. Consumer Analysis of the Indianapolis Metropolitan Market. 16th Annual Report, p. 39.

The Omaha World Herald, 1961-62. Consumer Analysis of the Greater Omaha Market, p. 30.

The Salt Lake Tribune, 1962. Survey conducted by Newspaper Agency Corporation. Information given in letter from Mr. Jim Sane, Salt Lake Tribune Library, Salt Lake City, Utah.

The Toledo Blade & Times, 1961-62. Top Ten Brands in Toledo, Ohio. 7th Annual Consumer Inventory, p. 39.

The Youngstown Vindicator, 1962. Brand Profiles, Top Ten Brands, Information given by Mr. Alan F. Mason, Manager General Advertising, Youngstown Vindicator, Youngstown, Ohio.

APPENDIX

Letter to Various U.S. Newspaper Publishers

Dear Sir:

I am a candidate for the Ph.D. degree in Agriculture (Poultry Marketing) and am conducting research for a thesis in the area of turkey merchandising. Much of the information I need does not seem to be available through our University Library. This includes copies of consumer brand preference studies by the major newspapers in our country. Therefore, I would appreciate it if you would send me the latest copy of any such study your newspaper may have conducted.

Both the Detroit News and the Detroit Free Press have sent me copies of their most recent surveys and I have found them very useful. I am particularly interested in consumer preference for brands of frozen whole turkey.

Thank you in advance for your assistance in this matter.

Sincerely,

James C. Makens
Graduate Assistant

Name _____

Address _____

TURKEY QUESTIONNAIRE

Thanksgiving is still two months away and you probably haven't thought about the purchase of a Thanksgiving turkey yet. However, based on your expectations as you see them now, please answer the following questions to the best of your ability.

If you wish to comment on any question, please do so in the space below the question.

Check the appropriate blank (one for each question)

1. Did you buy a turkey for last Thanksgiving (1961)?

_____ yes or _____ no

2. If you did, what brand did you buy?

_____ brand name or _____ can't remember

3. What was the approximate weight?

_____ weight or _____ can't remember

4. What was the grade?

_____ grade or _____ can't remember

5. What was the sex?

_____ hen or _____ tom or _____ can't remember

6. Do you intend to buy a turkey for Thanksgiving this year?

_____ yes or _____ no or _____ uncertain

7. If the store in which you regularly shop does not have in stock the brand of turkey you desire, will you:

   a. Buy another brand of turkey _____

   or

   b. Go to another store in search of the brand you want _____

8. Would you be willing to pay extra for a turkey bearing a well-known brand name versus a turkey that appeared to be of as high a quality but which had a brand name unfamiliar to you?

   _____ or _____ or _____
   yes no uncertain

9. Would you be willing to pay extra for a turkey bearing a well-known brand name versus a turkey that appeared to be of as high a quality but which had no brand name on it?

   _____ or _____ or _____
   yes no uncertain

---

10. Were any questions difficult to understand on this questionnaire?

    _____ or _____
    yes no

11. If so, which ones? _____

    _____

JM/v/
9/62

Appendix

September 1962 Chi Square Analysis $X^2 = 2\ (O - E)^2$

Series	Turkey on Display		Chi Square (X^2) Afternoon	Evening
I	No Brand		7	11.40
	No Brand		1.47	.64
	Omega Brand		31.84	17.03
	Beta Brand		3.18	1.52
		Total	43.49	30.59
II	No Brand		6.98	4.02
	No Brand		3.18	1.83
	Omega Brand		42.24	44.49
	Beta Brand		4.20	10.94
		Total	56.69	61.28
III	No Brand		2.24	2.41
	No Brand		5.95	4.37
	Omega Brand		46.04	17.03
	Beta Brand		8.57	12.89
		Total	62.40	36.70

N - 1 = 3

Appendix

September, 1962, Correlation Coefficient Analysis

	Series I		Series II		Series III	
	Aft.	Eve.	Aft.	Eve.	Aft.	Eve.
Score	42.68	53.13	43.07	53.81	56.97	52.96

Appendix

Example of Chi Square Analysis used to determine significance between pairs of samples in Panel Ranking Test, November, 1962.

Formulas $X^2 = \frac{2 \Sigma (X - M)^2}{2}$

Brand	First	Second	Third	Fourth
Sigma	15	53	52	48
Omega	116	18	17	17
Sum	131	71	69	65
Ave (X)	65.5	35.5	34.5	32.5
Obs Ave (X-M)	50.5	17.5	17.5	15.5
$(X-M)^2$	2550.2	306.2	306.2	240.2
$\frac{(X - M)^2}{X}$	38.9	8.6	8.8	7.4
$X^2 = \frac{2 \Sigma (X - M)^2}{X}$		127.2**		

**Highly significant - significant at .01 alpha level.

Appendix

Wilcoxon Matched-Pair Signed Rank Test

Sample: Taste Test, February, 1963.

The steps in the use of this test were as follows:

1. Determine the signed difference between the ranking a panel member gives to the Omega and Delta sample. If the difference favors the Omega sample assign a + value to the rating, if not assign a negative value. As an example, if a panel member ranked Omega as Excellent and Delta as Good, then the Omega sample would be given a signed difference of +1.

2. Rank the d's without respect to the sign. In the case of tied d's assign the average of the tied ranks. In this case, there were 89 signed differences of 1 (57 +, 32 -); 19 differences of 2 (12 +, 7 -) and 3 of 3 (all positive). Therefore, consecutive numbers of 1 through 89 to arrive at a rank $\frac{(1 + 2 + 3 + 4 \ldots . 89).}{89}$ Consecutive numbers from 90 - 108 were added and then divided by 19 to arrive at a rank for the signed differences of 2 and a similar procedure using numbers 109 - 112 was used for the signed difference of three.

3. Affix to each rank the sign (+ or -) of the d which it represents.

4. Determine T which equals the smaller of the sums of the like signed ranks. The negative value was found by multiplying

Wilcoxon Matched-Pair Signed Rank Test -- Continued.

the rank of the negative differences by the number of these differences for each individual signed difference then summing these figures. The same was done to find the positive summation.

Signed Difference	Rank	No. Positive	No. Negative
3	110	3	0
2	99	12	7
1	45	57	32

Method used to determine Positive T (32 x 45 + 7 x 99 = 2133)

Method used to determine Negative T (110 x 3 + 99 x 12 + 57 x 45 = 4183)

5. By counting, N was determined which equalled the total number of d's, N - 111.

6. The following formula was then used to find x.

$$x = \frac{T \text{ (sum of the ranks)} - \mu_T \text{ (mean)}}{\text{(standard deviation)}} = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}} =$$

$$\frac{2133 - \frac{111(111+1)}{4}}{\sqrt{\frac{111(111+1)(2 \times 111+1)}{24}}} = \frac{2133 - \frac{12432}{4}}{\sqrt{\frac{2772336}{24}}} =$$

$$\frac{2133 - 3108}{\sqrt{115514}} = \frac{-1075}{\sqrt{115514}} = \frac{-1075}{339.88} = 3.1$$

Wilcoxon Matched-Pair Signed Rank Test -- Continued.

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7. A 3.1 value for z was then located in a Table of Probabilities Associated with Values as Extreme as Observed Values of z in the normal distribution. It was found that at the 1 percent level there existed only a .0009 probability or 9 chances in 10,000 that the results would exist by chance alone.

Appendix

Chi Square calculation for Taste Test II - February, 1963.

$$\frac{(O - E)^2}{E}$$

Turkey Sample Preferred	No. Observed	No. Expected
%	49	20.3
*	4	20.3
Neither	8	20.3
	61	61

$$\frac{(49-20.3)^2}{20.3} + \frac{(4-20.3)^2}{20.3} + \frac{(8-20.3)^2}{20.3} =$$

$$\frac{(28.7)^2}{20.3} + \frac{(15.3)^2}{20.3} + \frac{(12.3)^2}{20.3} =$$

$$\frac{823.69}{20.3} + \frac{234.09}{20.3} + \frac{151.29}{20.3} =$$

$$40.5 + 11.0 + 7.4 = 58.9^{**}$$

$$N - 1 = 2$$

**Highly significant.

TURKEYS (Taste Test No. I) Afternoon

Taste the sample from an Omega brand turkey, then taste the sample from a Delta brand turkey.

Now rank the two samples

Omega Sample		Delta Sample	
Excellent	_____	Excellent	_____
Good	_____	Good	_____
Fair	_____	Fair	_____
Poor	_____	Poor	_____
Bad	_____	Bad	_____

Which sample did you prefer:

The Omega brand sample _____

The Delta brand sample _____

Both the same _____

COMMENTS: _____

(You may write on reverse of card, also)

CARD USED BY PANEL MEMBERS DURING FEBRUARY, 1963 TASTE TEST NO. I.
(Actual brand names were used rather than Greek names).

TURKEYS (Taste Test No. II) Afternoon

Taste the sample marked % and the sample marked *.
Now please indicate:

1. Which turkey do you believe the sample marked % came from?

   An Omega brand turkey _____

   A Delta brand turkey _____

   Can't even guess _____

2. Which turkey do you believe the sample marked * came from?

   An Omega brand turkey _____

   A Delta brand turkey _____

   Can't even guess _____

3. Which sample did you prefer? % _____ * _____

COMMENTS: _____

_____

_____

CARD USED BY PANEL MEMBERS DURING FEBRUARY, 1963, TASTE TEST NO. II.

MICHIGAN STATE UNIVERSITY

CONSUMER PREFERENCE TEST

TURKEYS C

CHECK EITHER DISPLAY ONE OR DISPLAY TWO IN EACH OF THE 11 Stores

DISPLAY ONE		DISPLAY TWO	
	Store One		
All chances are Sample * turkey, No chances of Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Two		
9 chances are Sample * turkey, 1 chance is Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Three		
8 chances are Sample * turkey, 2 chances are Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Four		
7 chances are Sample * turkey, 3 chances are Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Five		
6 chances are Sample * turkey, 4 chances are Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Six		
5 chances are Sample * turkey, 5 chances are Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Seven		
4 chances are Sample * turkey, 6 chances are Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Eight		
3 chances are Sample * turkey, 7 chances are Sample # money	( )	All chances are Sample % turkey, a sure choice	( )

Consumer Preference Test -- Continued.

	Store Nine		
2 chances are Sample * turkey, 8 chances are Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Ten		
1 chance is Sample * turkey, 9 chances are Sample # money	( )	All chances are Sample % turkey, a sure choice	( )
	Store Eleven		
All 10 chances are Sample # money, No chance of Sample * turkey	( )	All chances are Sample % turkey, a sure choice	( )

Appendix

Chi Square Analysis - Utility Test - April, 1963.

Book value for:

95 percent confidence level with one degree of freedom = 3.84

H_o: Potential turkey consumers do not have a preference for either the Omega or the Sigma Brand Turkey.

$X^2 = i(oi - Ei)^2 = (45 - 62)^2 + (79 - 62)^2 = (17)^2 + (17)^2 = 9.32$

Results:

Hypothesis rejected.

H_o: Three fourths of the potential turkey consumers will not pay more for the Omega turkey than for the Sigma turkey.

$X^2 = i(Oi - Ei)^2 = (48 - 31)^2 + (76 - 93)^2 = 12.4$

Appendix

Regression Analysis July, 1963 - Well Known Brand

Well Known Brand Omega

Price X	Quantity X
$ 2.00	155
3.00	153
3.25	150
3.50	147
3.75	136
4.00	115
4.25	54
4.50	34
4.75	25
5.00	13
5.50	8
6.00	7

Equations $\bar{Y}X = a + b\,(X-\bar{X})$

$Xi = 4950$

$Xi = 2,180,000$

$Yi = 997$

$Yi = 128,243$

$Xi\ Yi = 339,325$

$X = 412,50$

$Y = 83.08$

Stops:

$$S^2\ X^2 = \frac{Xi^2 - n\bar{X}^2}{n-1} = \frac{2,180,000 - 12\ (170,156.25)}{12,556,82} =$$

$$SY^2 = \frac{Yi - n\bar{X}^2}{n-1} = \frac{128,243 - 12\ (6902.29)}{11} = \frac{45,415.52}{11} =$$

4,128.68

$$SXY = \frac{Yi\ Xi - n\ \bar{X}\ \bar{Y}}{n - 1} = \frac{339,325 - 12(412.5)\ (83.08)}{11}$$

$$\frac{71,921}{11} = -6629.18$$

$$a = \bar{Y} = 83.08$$

$$b = \frac{SXY}{SX^2} = \frac{-6,629.18}{12,556.82} = -.527$$

$$S^2YX = \frac{N-1}{N-2}\ SY^2 - \frac{SXY^2}{SX^2} = \frac{11}{10}\ (4,128.68 - 3,499.77) =$$

691.8

$$r = \frac{SXY}{SXSY} = \frac{-6629.18}{(112.1)(64.2)} = \frac{-6629.18}{7196.82} = .921$$

$$r^2 = .85$$

$$\bar{Y}X = a + b\ (X - X^2) -$$

$$\bar{Y}X = 83.08 + (-.527)\ (X - 412.5)$$

$$83.08 = \frac{-.527\ (X - 412.5)}{X}$$

$$\bar{Y}X = a + b\ (X - \bar{X}) = 83.08 - .527\ (X - 412.5)$$

Vertical axis	Horizontal axis
$ 4,12.5	83.08
5,12.5	83.08 - 52.7 = 30.38
3.12.5	83.08 + 52.7 = 135.78
2.12.5	83.08 + 105.4 = 188.48

Appendix

Regression Analysis - July, 1963 - Unknown Brand

Price X	Quantity Y
$ 2.00	154
2.50	149
3.00	144
3.25	136
3.50	132
3.75	122
4.00	91
4.25	40
4.50	28
4.75	18
5.00	10
5.50	6

$Xi = 4600$

$Xi^2 = 1882500$

$Yi = 1030$

$Yi^2 = 128,582$

$XiYi = 330,250$

$\bar{X} = 383.33$

$\bar{Y} = 85.83$

Steps:

$$SX^2 = Xi - n\bar{X}^2 = 1,882,500 - 12(383.33)^2 =$$

$$\frac{119,197,32}{11} = 10,836.12$$

$$SY^2 = Yi - n\bar{X}^2 = 128,582 - 12\ (85.83)^2 =$$

$$\frac{40,180.52}{11} = 3652.77$$

$$SXY = \frac{XiYi - n\bar{X}\bar{Y}}{n-1} = \frac{330,250 - 12\ (330,250) - 12\ (383.33)\ (83.33)}{11} =$$

$$\frac{-64,564.52}{11} = 5869.5$$

$$a = \bar{Y} = 83.83$$

$$b = \frac{SYX}{} = \frac{-5869.5}{10,836.12} = -.541$$

$$S^2YX = \frac{r - 1}{r - 2} \quad SY^2 \frac{- SXY^2}{SX^2} = \frac{11}{10} =$$

$$(3652.77 - 3178.74) = 521.4$$

$$r = \frac{SXY}{SXSY} = \frac{-5869.5}{(104.1)(60.5)} = \frac{-5969.5}{6298.5} = .931$$

$$r^2 = .867$$

$$\bar{Y}X = a + b\ (X-\bar{X}) = 85.83 + (-.541)\ (X-383.33)$$

Vertical axis	Horizontal axis
$ 3.8333	85.83
5.8332	85.83 - .541 (583.33 - 333.33) = -22.37
4.8333	85.83 =54.1 = 31.73
2.8333	85.83 + 54.1 = 139.93

Appendix

Chi Square (X^2) Analysis for Adaptation of Utility Test - July, 1963.

H_o: 75 percent of the potential turkey consumers are unwilling to pay extra for a well-known brand.

Total sample population = 155

Total consumers willing to pay extra = 58

Expected value (155 X .25) = 38.75

Total consumers not willing to pay extra = 97

Expected value (155 - 37.5) = 117.5

$$X^2 = \frac{(O - E)^2}{E} = \frac{(58 - 38.75)^2}{38.75} + \frac{(97 - 117.5)^2}{117.5} =$$

$$\frac{(18.25)^2}{38.75} + \frac{(20.5)^2}{117.5} =$$

$$\frac{370.56}{38.75} + \frac{420.25}{117.5}$$

$$9.56 + 3.57 = 13.13$$

MICHIGAN STATE UNIVERSITY
Consumer's Opinion of Produce Quality

Series I — Turkeys

Check your preference for money or turkey in each store.

Store 1	$2.00 __ or turkey __	Store 8	$4.25 __ or turkey __
Store 2	$2.50 __ or turkey __	Store 9	$4.50 __ or turkey __
Store 3	$3.00 __ or turkey __	Store 10	$4.75 __ or turkey __
Store 4	$3.25 __ or turkey __	Store 11	$5.00 __ or turkey __
Store 5	$3.50 __ or turkey __	Store 12	$5.50 __ or turkey __
Store 6	$3.75 __ or turkey __	Store 13	$6.00 __ or turkey __
Store 7	$4.00 __ or turkey __		

Name _____ Comments _____

SCORE CARD USED BY PANEL MEMBERS DURING JULY, 1963, CONSUMER PREFERENCE PANEL AT MICHIGAN STATE UNIVERSITY.

MICHIGAN STATE UNIVERSITY
Consumer's Opinion of Produce Quality

Series II

Turkeys

Check your preference for money or turkey in each store.

Store 1 $6.00 __ or turkey __

Store 2 $5.50 __ or turkey __

Store 3 $5.00 __ or turkey __

Store 4 $4.75 __ or turkey __

Store 5 $4.50 __ or turkey __

Store 6 $4.25 __ or turkey __

Store 7 $4.00 __ or turkey __

Store 8 $3.75 __ or turkey __

Store 9 $3.50 __ or turkey __

Store 10 $3.25 __ or turkey __

Store 11 $3.00 __ or turkey __

Store 12 $2.50 __ or turkey __

Store 13 $2.00 __ or turkey __

Name _____ Comments _____

_____

SCORE CARD USED BY PANEL MEMBERS DURING JULY, 1963, CONSUMER PREFERENCE PANEL AT MICHIGAN STATE UNIVERSITY.

Appendix

Binomial Test - Used to evaluate overall agreement in answers by any one panel member.

Procedure: A "table of probabilities associated with values as small as observed value of X in the binomial test," was used to directly determine the significance of any one individual's placing. Therefore, N equaled the total number of placings and X represented the smaller frequency.

Example: Suppose an individual had ranked birds in 12 series, then 12 would represent N since a first place score had been recorded for this person 12 times. If three of the placings favored an unknown brand turkey and nine favored a known brand then three was the X value. In this example, the test would be to determine if this person picked a well-known brand a significant number of times at the .05 alpha level. Since the table value is 073, it is apparent that these results were not significant at that level since a value of 050 would be necessary.

MICHIGAN STATE UNIVERSITY

CONSUMER PREFERENCE TEST

TURKEYS

I.	II.	III.	IV.	V.	VI. Sale
# ____	* ____	& _____	( ) _____	% _____	& _____
% ____	& ____	# _____	* _____	( )_____	% _____
( )____	% ____	* _____	& _____	& _____	* _____
& ____	( )____	% _____	# _____	* _____	( )_____

Name: _____

Comments: _____

TYPE OF SCORE CARD USED BY PANEL MEMBERS DURING CONSUMER PREFERENCE PANEL SESSIONS.