TESTING INSTITUTIONAL ACCEPTANCE OF NEW FOOD PRODUCTS: A CASE STUDY ON PROCESSED ONION PRODUCTS

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ABSTRACT

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By

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There has been little development of techniques for testing the market acceptance of new food products designed for the institutional food market. Methods for testing consumer preferences and acceptance of new retail food products have been fairly well refined but the institutional segment of the food market has been largely ignored. The primary objectives of this study were; (1) to develop methodology for testing institutional market acceptance of new food products by means of an institutional sales test, (2) to determine the market potentials for processed onion products, and (3) to gather data on the utilization of onions and onion products by the institutional food market.

In the winter of 1962-63 an institutional sales test was conducted in Detroit, Michigan to test the acceptance of frozen diced onions. The test was conducted by having samples of the tested product distributed to Detroit institutions by the frozen food distributors in Detroit. The reactions of institutional buyers and chefs to the product were recorded and an attempt was made to sell the product to institutions. Weekly records were kept of the initial and repeat sales to each institution for a period of nine months.

The second part of the institutional sales test was completed in the summer of 1962 by a survey of institutions in Detroit to determine the amount of market penetration of the tested product and to gather data on purchase patterns and utilization of onions and onion products. A random sample of 376 of the 1800 single-unit feeding establishments in Detroit were surveyed by means of personal interviews. In addition all multi-unit feeding firms in Detroit were surveyed; there were 11 such multi-unit firms with a total of 540 individual feeding establishments.

Sales of frozen diced onions under the institutional sales test were 34 cases of 24 pounds in November, 67 cases in December and 69 cases in January. During the sales test the price of frozen diced onions was 18 cents per pound compared to a price of 7 or 8 cents per pound for fresh onions. Thirty-seven Detroit institutions made a trial purchase of frozen diced onions during the 12 week test period. The reasons for lack of better acceptance of the tested product as given by chefs are as follows in order of importance: (1) habitual use of other forms of onions, (2) price, (3) poor quality or flavor, and (4) lack of freezer space.

The 376 single-unit institutions and 540 establishments of multi-unit firms included in the Detroit survey used a total of 105,632 pounds of fresh onion equivalent per week or 5,448,404 pounds per year. Of this total amount, the following percentages were used in various foods: (1) sandwiches - 33.3%, (2) salads or relishes - 3.8%, (3) soups or gravies - 15.2%, (4) stews - 8.7%, (5) fried with meat -

7.8%, (6) meatloaf - 5.9%, (7) flavoring for baked meats - 6.6%, (8) onion rings - 9.7%, (9) creamed onions - 4.1%, (10) spaghetti sauce - 2.8%, and (11) other foods - 2.1%.

There appears to be a good prospect for expanding the institutional market for processed onion products. As institutional labor costs increase and the quality of onion products are improved, institutions will use more processed onion products. Projections from the survey indicate that there is a potential U.S. institutional market for all processed onion products of 291 million pounds per year (fresh equivalent).

The institutional sales test appears to be a promising technique for testing the institutional acceptance of new food products. The chief advantage of the sales test over other test methods such as the demonstration-interview technique is the fact that the tested product is actually offered for sale in a test market. This should make predictions of acceptance more reliable than those based on other test techniques if the sales test is properly conducted and controlled.

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

During the past 25 years the United States food industry has been marked by numerous major changes. Among these changes have been the development of mass merchandising, increased food processing, extensive advertising and promotion of branded food products, the advent of highly convenient and specialty foods such as T.V. dinners and the introduction of thousands of new processed food products. These changes have brought about adjustments in the marketing patterns of most food commodities and changes in the structure of the food industry.

Virtually all farm foods bought by consumers today have gone through some type of processing such as trimming, washing or packaging and many foods are completely factory processed into heat and serve dishes. The proportion of the total food supply processed beyond the steps of washing and grading increased from 25 percent in 1925 to 35 percent in 1954.[1] An index of processing of all farm foods shows a 240 percent physical increase and a 77 percent per capita increase in volume processed during the period 1909 to 1958. The category of fruits and vegetables has shown one of the largest increases in processing with a 280 percent per capita increase from 1909 to 1958.[2] One result of the increased processing of fruits and vegetables has been the development and introduction of many new fruits and vegetable product forms. The widespread adoption of new processing techniques such as freezing and concentrating frozen juices and the improvement of older techniques such as drying have greatly expanded the number of foods which can be marketed

in processed form and the number of ways in which foods can be processed. With the development of different food product forms and new food products, many problems have arisen in the area of food marketing.

Food processors are faced with the problem of developing new and better food products and finding markets for them. This process is complicated by the fact that processors of basic food commodities supply three distinct groups of customers: household consumers, restaurants and institutions, and remanufacturers of food products. Remanufacturers are processors who make consumer food products such as soups and sauces from foods which have been previously factory processed. Each of these segments of the total market for food desire varying amounts of convenience in food products and use different criteria in purchasing food.

There is considerable risk involved in the development and introduction of new food products. A processor can never be sure if a new product will catch on in the market and develop sufficient sales to make its production profitable. It has been estimated that only one out of every ten new products will succeed.[3] The costs of developing a new processed food product can be quite expensive. Recent estimates indicate that promotion expenditures of a magnitude of 1,000,000 dollars are needed to successfully introduce and market a new consumer product on a national basis.[4] With the inherent risks of failure and high costs of development and promotion of a new food product it is imperative that a food processor have a reasonably accurate idea of the probable saleability or acceptance of new food products prior to their commercialization or marketing. This information is needed for both the consumer and institutional segments of the total food market. Most major food processors

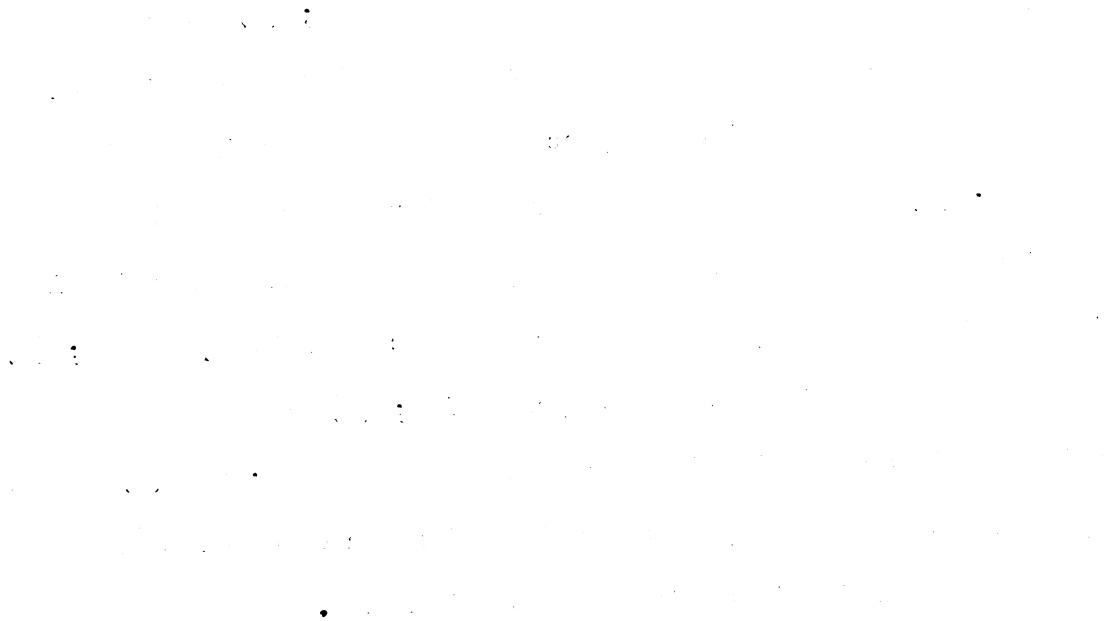
gain information on the probable success of new products by testing the products in various ways such as laboratory testing, consumer preference testing, and market or sales testing.

The techniques for laborabory testing and consumer preference testing of new products are fairly well defined. Considerable development has also taken place in the areas of consumer acceptance testing, certain types of institutional acceptance testing and retail sales testing. There appears to be a serious lack of published research or methodology dealing with the prediction of market potentials for new food products at the institutional level. To the author's knowledge, there is no published research on methods of conducting institutional sales testing. A major portion of this study is devoted to the development of methodology for conducting institutional sales tests.

An examination of the fruits and vegetables which are extensively processed leads to the conclusion that they have several characteristics in common which make them adaptable to processing. In view of the trends in processing of other fruits and vegetables it appears that onions might have considerable potential for processing. During the time this study was being planned a new processed onion product, frozen diced onions, was introduced at the retail level in several Midwestern cities. Since this new food product had not been offered for sale to institutions it seemed ideal for use as a test product.

The primary problem dealt with in this study is the lack of adequate technique for predicting institutional market potentials of new food products. The specific objectives of the study are: (1) To develop method-

ology for conducting an institutional sales test; (2) To use the developed methodology in an actual institutional sales test of a new processed food product to determine the practicality and workability of the methodology; (3) To develop a predictive model using data developed in the institutional sales test which will predict regional and national institutional market potentials for new processed food products; (4) To examine the potentials for onion processing; (5) To determine the institutional market potential for frozen diced onions; and (6) To develop data concerning the purchase and utilization of onions and onion products by institutional feeding establishments.



FOOTNOTES - CHAPTER I

[1]M. C. Burk, Consumption of Processed Farm Foods in the United States, U.S. Department of Agriculture Marketing Research Report No. 409, (Washington: U.S. Government Printing Office, 1960), p. 5.

[2]W. H. Waldorf, Output of Factories Processing Farm Food Products in the United States, 1909-1958, U.S. Department of Agriculture Technical Bulletin No. 1223, (Washington: U.S. Government Printing Office, 1960), p. 4.

[3]The Big Challenge in Food Marketing, Eighth Biennial Grocery Study (New York, This Week Magazine, 1959), p. 9.

[4]Ibid., p. 9.

CHAPTER II

REVIEW OF LITERATURE AND BACKGROUND INFORMATION

A. Trends in Food Processing

Processing of farm food products has greatly expanded in the United States over the past 55 years. An index of factory processing of all farm foods shows a 240 percent increase in amount processed and a 77 percent per capita increase in the period 1909 to 1958.[1] Most commodity groups have shown increases in factory processing but poultry and fruits and vegetables have shown the largest increases during the last half century.

Processing of fruits and vegetables has shown a 635 percent physical increase and a 280 percent per capita increase from 1909 to 1958. Farm marketings of fruits and vegetables during the same period had a physical increase of only 156 percent.[2] United States per capita consumption of fresh fruits and vegetables has declined for several years but has been offset by increased per capita consumption of processed fruits and vegetables. The per capita consumption of processed fruits and vegetables increased from 88 pounds in 1935 to 229.3 pounds in 1960 as shown by Table 1. The 163 percent increase in per capita consumption of processed fruits and vegetables compares to an increase of only 7.7 percent in total per capita consumption of fruits and vegetables. Specific examples of commodities with exceptionally large increases in processing since 1935 are citrus fruits and potatoes.

TABLE I. PER CAPITA CONSUMPTION OF FRUITS, VEGETABLES AND POTATOES IN FRESH AND PROCESSED FORMS.[a]

	Pounds of Per Capita Consumption					
	Fresh		Processed		Total	
	1935	1960	1935	1960	1935	1960
Citrus[b]	44.6	33.7	3.6	52.6	48.2	86.3
Fruit (Other than Citrus)[b]	91.9	64.7	37.4	50.1	129.3	114.8
Vegetables[c]	111.2	101.9	47.0	99.6	158.2	201.5
Potatoes[d]	142.0	82.0	.1	27.0	142.1	112.0
TOTALS	389.7	282.3	88.1	229.3	477.8	511.6

[a]Major Statistical Series of the U.S. Department of Agriculture: How They are Constructed and Used, U.S. Department of Agriculture, Agricultural Handbook No. 118 (Washington: U.S. Government Printing Office, 1957), pp. 34-41.

[b]U.S. Department of Agriculture, The Fruit Situation, January 1, 1961, pp. 24-29.

[c]Consumption Trends and Patterns for Vegetables, Potatoes, Sweet Potatoes, Dry Beans, and Peas, U.S. Department of Agriculture, Agricultural Handbook No. 215 (Washington: U.S. Government Printing Office, 1961), p. 11.

[d]U.S. Department of Agriculture, Crop Reports, "Irish Potatoes; Utilization of the 1960 Crop with Comparisons", March, 1961, p. 3.

Factory processing of citrus fruits has shown a 1460 percent per capita increase from 1935 to 1960.[3] In 1960 over 60 percent of total citrus consumption was in processed form as compared to 7.5 percent in 1935. (See Table I) The increase in citrus processing has come from chilled juices, canned citrus sections, and frozen concentrated juices, with frozen concentrated orange juice being the main factor.[4] Potato

processing increased from less than one percent of the commercial crop in 1935 to 25 percent of all potatoes marketed commercially in the United States in 1960.[5] The increase in potato processing has been spread over numerous frozen and dehydrated forms as well as potato chips. Largely as a result of technological developments in freezing and dehydration techniques, the total amount of potatoes processed increased from 24.7 million hundredweight in 1956 to 48.3 million hundredweight in 1960.[6] The developments in potato processing may be an indication of the potential growth of onion processing since they have many similar characteristics.

Several factors are probably responsible for the large increases in factory processing of farm foods. Waldorf relates about 3/4 of the increase in factory processing of all farm foods between 1909 to 1958 to increased marketing of food products by farmers and attaches lesser importance to changes in purchase patterns of processed and unprocessed foods, reduction of food production for home use, shifts of processing from the non-factory processing sector to the factory processing sector, and technological changes. However, Waldorf found that only 24 percent of the increase from 1909 to 1958 in factory processing of fruits and vegetables could be attributed to increased farm marketings.[7]

Burk divides factors affecting consumption of commercially processed foods into supply affecting factors and demand affecting factors. Included in factors affecting supply are technological changes, cost relationships and changes in marketing institutions. Demand elements include income, urbanization, home-food production, and employment and

education of homemakers.[8] Technological advances and changes in marketing institutions have doubtless had considerable effect on increased consumption of processed foods. Improvements in freezing and dehydration methods have made possible the marketing of many convenient, high-quality food products which were not available prior to 1940. Frozen fruit juice concentrates, dehydrated and frozen potato products, cake mixes, and frozen poultry are specific examples of items which have become widely available as a result of new technology and gradual adoption of previously available technology by the food marketing industry. Changes in retailing, primarily the growth of supermarkets and mass merchandising, have also increased the availability of processed food products.

The relationship between cost of processed versus unprocessed food items has changed considerably over time in this country. Many of the technological developments in food processing have not only resulted in high quality and convenient food products but in many cases have lowered the relative costs of food items. A 1957 survey of retail costs of highly processed and relatively unprocessed food products indicated that highly processed foods are only slightly higher in price than equivalent amounts of unprocessed foods.[9] Retail prices of processed fruits and vegetables have increased at a slower rate than their relatively unprocessed counterparts.[10] (See Table II) These relative decreases in cost over time of processed foods are probably due to savings in transportation and handling charges, concentration of production in low-cost producing areas, and increased scale of factory food processing operations. Many examples can also be cited where a

processed product is cheaper than an equivalent amount of the same food in fresh or unprocessed form.[11]

Demand elements do not appear to be as important in the historical increase of factory processing of farm foods as are supply elements.

TABLE 11. ESTIMATES OF RETAIL PRICE CHANGES FOR RELATIVELY UNPROCESSED AND PROCESSED FARM FOODS, SELECTED YEARS.[a]

INDEX 1947-1949 = 100

Commodity Group	Sub-Indexes of Bureau of Labor Statistics Retail Food Price Index			
All Farm Foods	1935	1939	1947	1954
Relatively Unprocessed	49	47	95	111
Processed	54	50	99	110
Fruits and Vegetables				
Relatively Unprocessed	46	44	96	113
Processed	63	55	105	104

[a]M.C. Burk, Consumption of Processed Farm Foods in the United States, U.S. Department of Agriculture Marketing Research Report No. 409, (Washington: U.S. Government Printing Office, 1960), p. 5.

Burk reports that the demand elements of income and urbanization accounted for less than one-third of the change in consumption of processed food products between 1942 and 1955.[12] Income was found to be the primary demand factor affecting increased consumption of processed foods, accounting for an increase in consumption of all processed foods of about 10 percent between 1942 and 1955. Burk estimates that rising labor costs in restaurants, rising real incomes, urbanization shifts, technological

developments, and social changes by 1975 will increase per capita consumption of processed foods by 18 percent over 1954 levels.[13] If this projection holds true, factory processing of farm foods will continue to increase and at a faster rate than consumption of all foods.

B. Growth of the Institutional Food Market

United States Department of Commerce statistics show that in 1961 the United States' expenditures for foods and beverages amounted to 81.1 billion dollars. Of this amount, 20.8 billion, or 25.6 percent, was accounted for by meals and beverages purchased in public eating places or furnished by governmental or other institutional feeding establishments.[14] This means that over 25 percent of all money spent for foods and beverages in 1961 was devoted to meals and beverages consumed away from home. The institutional segment of food and beverage expenditures increased from 18 percent of total food and beverage expenditures to 25 percent of all food and beverage expenditures during the period of 1955 to 1961.[15] Institutional feeding establishments as used here refers to restaurants, cafeterias, hotels, in-plant feeding services, catering services, schools, hospitals, prisons, and all other private and public establishments serving meals on a regular basis with the exception of boarding houses and private households. The United States Department of Agriculture estimates that 17.1 percent of the physical volume of domestic foods marketed in the United States in 1959 was marketed through public eating places as compared to 15.2 percent in 1950.[16] These comparisons indicate that the institutional segment of the United States market for food is growing in size and relative importance over time in

terms of volume of food used and percentage of total food and beverage expenditures accounted for.

The increases in the institutional market for food can probably be attributed to increases in in-plant feeding, urbanization changes, shifts in the age distribution of population, increases in incomes, increased travel, and growth of the labor force. To the author's knowledge, there is no published research on the factors which affect the size of the institutional market for food. An illustration of the lack of information about the institutional food market is provided by Burk in the following quote: "Although we may expect further increases in the proportion of the total food supply handled by eating places, we lack basic statistical and economic information on which to develop sound projections for this segment of the market."[17] The United States Department of Agriculture began a series of surveys in 1956 to determine the nature and scope, buying practices, food uses, and size of the away-from-home segment of the food market.[18] The institutional market for food has been partially described in a recent publication of the Louisiana Agricultural Experiment Station which lists and discusses possible institutional markets for canned Louisiana sweet potatoes.[19] A good deal more of this type of research is needed to outline the nature and dimensions of the institutional food market as well as specific buying practices and needs of this segment of the food industry.

C. The Need for Pre-Market Testing of New Food Products

One of the characteristics of the food processing industry, particularly since 1945, has been the continuous development of new food pro-

ducts. In 1958 a chain store executive estimated that 70 percent of the individual food items sold by his company were not in existence ten years earlier in their present form.[20] New products have been described as the lifeline to survival for both processors and distributors in the food industry.[21] One large food manufacturer has stated that over two-thirds of their line of products is new since 1945.[22] In order to satisfy consumer demands for more convenient food products and to meet competition, the United States food processing industry has spent huge sums for research and development on new and improved food products. Not all new food products appeal to consumers or develop a profitable level of sales. The mortality rate of new grocery products which are introduced on the market is estimated at 80-90 percent.[23] A failure is defined as a product which does not develop a profitable level of sales and is withdrawn from the market within a short time after its introduction.

The costs of new product development, commercialization and promotion can be very high. It has been estimated that the cost of developing and marketing a new product nationally is at least one million dollars.[24] The high cost of advertising and promotion of new products is illustrated by the combined advertising budget of $8,705,000 spent to promote dehydrated potato products by 5 of the leading processed potato distributing firms in 1960.[25] The high costs of new product failures make knowledge of a product's market potential prior to its introduction a virtual necessity. Pre-market or market testing is the technique used by many food processors to gain early information on a product's com-

mercial market potential.

In recent years a great deal of research effort has been devoted to the broad area commonly referred to as "market testing." As in many of the relatively new areas of social science, there is little standardization or agreement of usage of various terms employed in reporting results from "market tests." Before looking at the research and literature available in this area, it is appropriate to decide upon definitions for the most commonly used terms. These definitions are by no means original and in some instances may not agree with popular usage of the defined terms. However, these definitions will hold wherever the terms are used in this study.

(1) Consumer preference refers to the ordering of choices among two or more alternative products or product modifications by a consumer or group of consumers.

(2) Product acceptance is defined as the degree of saleability of a product in a given market situation.

Pre-market testing can be broken down into three general categories--product quality testing, preference testing, and acceptance testing. Another method of classifying work done on pre-market testing is by the techniques used for testing; laboratory panels, a mass consumer panel and sales tests. Considerable work has been done in the area of determining differences in product quality among various product adaptations or product grades. Dawson and Harris have classified and reported on some 400 articles dealing with the use of sensory methods for measuring differences in food quality.[26] Most of these articles deal

with the use of trained or untrained sensory panels for differentiating product quality on the basis of taste, odor, appearance, texture, or other physical product characteristics.

Generally, the first step in pre-market testing of a new food product is in the area of consumer preferences. Most major food products processors maintain laboratory taste panels for the purpose of initial consumer preference testing of new products. These panels are used to test several modifications of a new food product under controlled conditions and give their preferences among the samples of the product with regard to taste, appearance, or other product characteristics. In addition to small private laboratory panels, some consumer preference tests have been conducted with relatively large groups of consumers chosen in such a way that they are representative of the consumer public at large with respect to characteristics known to affect food purchasing patterns.

Examples of different types of market test methods can be illustrated by a review of recent literature pertaining to market testing of new food products. Greig and Larzelere have reported on consumer preference tests of new apple and potato products through the Michigan Consumer Preference Panel in Detroit, Michigan.[27] Use of large laboratory-type panels has been reported by Lockhart and Gaines in testing consumer preferences for canned and frozen orange juice,[28] and by Dalrymple in testing preferences for grades of applesauce.[29] Methods of setting up large consumer panels and conducting panel tests have been reported by Girardot and Peryam[30] and by Schwartz and Pratt.[31] Research

has been conducted on the kinds and amount of bias involved in consumer panel test results by Nair.[32]

Mass consumer panels may be used to test consumer preferences for a new product. The two basic differences between laboratory panels and mass consumer panels are: (1) Mass panels are usually larger and more representative of the general consuming public than laboratory panels; (2) Mass panel tests are conducted by having a group of consumers use a new product in their homes rather than in a laboratory under controlled conditions. Mass consumer panels can be used to compare a tested product with competing or substitutable products (consumer preferences) and to determine advantages and disadvantages of a tested product (consumer reactions). The U.S.D.A. has used the mass consumer panel technique in testing consumer preferences for apple juice concentrate, frozen peas, and canned orange juice.[33] A report by Miller, Nair, and Harriman indicates that consumer preference tests of a new product by both a laboratory panel and a mass consumer panel yielded essentially the same results.[34] However, laboratory panel tests do not allow the collection of consumer reactions to a new product under conditions in which the product will normally be used.

Even though a new product may show up well in preference testing, the real answer to its success is consumer acceptance or willingness to buy under specified market conditions. The saleability of a new food product can be partially predicted by the use of product acceptance testing. Product acceptance testing goes beyond the point of determining preferences between product variations and attempts to determine

if consumers will actually buy a new product.

As soon as one moves from the area of consumer preference testing, market testing takes a new dimension. In product acceptance testing, the food industry must be concerned with both the consumer and the institutional segments of the food market. In the case of new consumer food products, the most common technique for testing product acceptance is the retail sales test. Even though a product has passed through laboratory tests and preference tests with flying colors, the critical question of the product's saleability is still unanswered. The techniques of retail sales testing have been developed to a rather high degree by the U.S.D.A. Agricultural Marketing Service, state agricultural experiment stations, private research organizations, and consumer product manufacturers. The basic methodology of retail sales tests is well described by Applebaum and Spears in their article "Controlled Experimentation in Market Research."[35] Retail sales tests have been used for many purposes such as the evaluation of merchandising methods, measuring effects of promotional expenditures on sales, and examination of consumer preferences as well as product acceptance. The degree of confusion in terminology in consumer research is illustrated by the number of studies dealing with merchandising techniques which contain the words "consumer preference" or "consumer acceptance" in their titles. Most retail sales tests of this type can be more accurately described as merchandising research rather than studies of consumer preference or acceptance.[36] An example of the use of retail sales testing to check consumer preferences is reported by Danner and Turner.[37] This test used

several stores to compare the sales of new jams and jellies made from Alabama blackberries with sales of established brands.

Retail sales tests have been used by Greig and Larzelere[38] and by Dwoskin and Jacobs[39] to test acceptance of dehydrated mashed potato products. These tests indicated that dehydrated potato flakes would have a high level of consumer acceptance. This product has since been marketed on a national basis and has attained considerable market success. Other use of retail sales tests to check product acceptance have been made by Brown[40] with frozen stuffed peppers, by Scott[41] with frozen passion fruit juice and by Wright[42] with cut flowers. When properly conducted, a retail sales test can be a very useful aid to a food manufacturer in deciding whether or not to market a new consumer product.

One major difference exists between acceptance testing of new products at the institutional level as opposed to consumer acceptance testing. In the case of the institutional market a food processor must not only ascertain that consumers will like his product when it is served to them but also that the buyers, dieticians, or chefs of institutions will buy and serve the product to their consumers. A successful consumer product may not be bought by institutions because of difficulty of preparation, high cost, short storage life, or any of a number of factors that bear on a restaurant buyer's choice of food products and types. Conversely, certain types of processed food products may be inherently better suited to use by institutions than by homemakers. Such products would show poor results from a retail sales test but might gain very wide acceptance by the institutional market.

The problem existent in such a situation is that different criteria are used by institutional food buyers than those used by homemakers. Consumer acceptance test data may give little indication of the acceptance of a new food product at the institutional level.

The principal method presently used for predicting product acceptance by the institutional market is the demonstration-interview technique.

This technique consists of demonstrating the preparation of a new food product to a sample of buyers for institutional feeding establishments and then recording the buyers reactions to the product by means of an interview after the demonstration. Predictions of product acceptance are made on the basis of information gained from the interviews. One obvious disadvantage of this technique is that the buyers may not act according to the responses which they give in an interview. The demonstration-interview technique has been used by Greig in examining the institutional acceptance of dehydrated potato flakes.[43] McCreary found that Greig's predictions of institutional acceptance of potato products based on the use of the demonstration-interview technique were not reliable as far as individual institutions or products were concerned but that predictions for total sales of dehydrated potato products were fairly reliable.[44] The demonstration-interview technique has been used by McGrath and Sills to test institutional acceptance of dehydrofrozen peas[45] and by Greig[46] in testing acceptance of dehydrofrozen apple slices. Market Research Report Number 580 is a report of the use of a modified version of the demonstration-interview technique to test institutional acceptance of dehydrated sweet potato flakes.[47] In this

study the reactions of restaurant patrons to dishes prepared from the tested products were gathered as well as the reactions of the buyers and chefs of the cooperating institutions.

Institutional acceptance testing by the demonstration-interview techniques differ from consumer acceptance testing in the fact that the tested product is not actually offered for sale to the institutions. While it is possible to obtain information on the reactions of institutions to a product by the demonstration-interview technique, only very limited predictions about sales of the product can be made. The successful use of retail sales tests in determining consumer acceptance of new products suggests that an institutional sales test would be a good method for determining institutional product acceptance. The lack of any published methodology for conducting institutional sales tests together with the need for a reliable method of determining institutional acceptance of new food products are the primary reasons and justifications for this study.

D. The United States Onion Industry

In the early stages of planning for this study it was decided to run an institutional sales test as a part of developing institutional sales test methodology. A new onion product was introduced on the retail market which seemed to have the possibility of widespread use in the institutional food trade. The following background information on the onion industry and potentials for onion processing was developed to serve as a guide for deciding whether or not to use frozen diced onions as a test product in an institutional sales test.[48]

1. Production

U. S. commercial onion production can be broken down into three broad seasonal categories: early spring onions, grown principally in Texas and harvested in late February to early April; intermediate onions, grown in Texas, California, Washington, New Jersey, Arizona and New Mexico, and harvested in late spring and early summer months; and late summer onions grown principally in New York, Michigan, California, Colorado, Oregon, Wisconsin, Idaho, Minnesota and Washington, and harvested in August or September. Early spring and intermediate onions are harvested and marketed almost immediately with little storage involved. These onions are normally characterized as being rather perishable in nature, producing lower per acre average yields than late summer onions, and having high production costs in relation to late summer onions. Average F. O. B. prices received for spring onions are generally higher than those of intermediate or late summer onions. The late summer crop customarily makes up about 75 percent of the total U.S. commercial onion crop. A large portion of the late summer onions are stored for use during the period from September to March. The majority of onions for processing come from the late summer crop since these are normally lower priced and available from storage stocks during much of the year.

U.S. acreage of onions has been declining for the past 23 years, with large year to year acreage fluctuations. Acreage planted does not present a clear picture of total onion production since unharvested or unmarketed acreage may often be a large part of the total during years

of large crops, poor weather conditions, or low prices. The total area planted to onions has declined from 132 thousand acres in 1939 to the 1961 level of 91 thousand acres.[49] The primary reason for the decline in acreage planted has been the spectacular rise in yields per acre resulting in significantly increased total production and lower prices. Average yield per acre of onions has increased rapidly over the past 23 years from 135 cwt. (national average) per acre in 1939 to 260 cwt. per acre in 1961.[50] This rise can be primarily attributed to improved varieties and cultural practices including the use of irrigation in the Western growing areas.

Total onion production has increased substantially over the past ten years. For example, annual average onion production for the five year period 1946-50 was 20.6 million cwt. as compared to annual average production during 1956-60 of 24.3 million cwt.[51] This amounted to an increase in production of approximately 18 percent over a ten year time period. The increase in onion production has about equaled the increase in U.S. population thus leaving per capita production nearly constant. A very close relationship exists between the amount of annual production and annual average onion prices. There appears to be little evidence of a trend line in actual dollar prices for onions during the period 1939-1960. However, in terms of constant dollars, or the season's average price received by growers adjusted by an index of prices paid for farm inputs, there is somewhat of a downward trend in prices received by growers. Increased production efficiency and greater yields per acre apparently enable onion producers to grow onions at relatively lower costs than they were able to do 20 years ago in terms of constant

dollars. An overall average price for onions during the period 1939-1960 is approximately $2.40 per cwt. and season's average prices have ranged from $4.60 per cwt. to as low as $1.10 per cwt. depending primarily on the size of the crop.[52]

New York, California, Michigan and Colorado produce approximately 55 percent of total U.S. onion production and 72 percent of the late summer onion crop. There has been a definite upward trend in acreage and production in California. The trend toward increasing onion production in California is due, at least in part, to the increase in onion dehydration. Acreage in New York has remained relatively stable while Michigan and Colorado acreage has declined slightly during the past 10-12 years. Production in new York has gone up steadily over the past 15 years while Michigan production has risen slightly and Colorado production has fallen. Over the past five years, on the average, New York has produced 19%, California 17%, Michigan 10% and Colorado 9% of the U.S. total commercial onion production.[53] There is a very significant upward trend in yields per acre for the four major late crop producing states since 1950. This is due to improved seed, better cultural practices, disease resistant varieties, and better pest and weed control.

2. Consumption

Official U.S.D.A. estimates of annual per capita consumption of onions range from 10.3 to 13.3 pounds of onions during the period 1935-1960.[54] These data do not provide a complete picture of actual onion consumption since onions used for dehydration and in various canned

foods are excluded from the computations. Apparent per capita consumption, or total U.S. production marketed minus net exports and divided by population ranged from 11.5 to 14.3 pounds annually depending on the particular year investigated. These figures do not account for onions exported or imported in processed form but do take account of international movements in fresh form. In addition to commercially produced onions it is estimated that onions produced for home use add at least an additional three pounds to per capita consumption figures.[55] U.S.D.A. data indicate that onions are the fifth most popular vegetable in terms of national per capita consumption.

In addition to estimates of per capita consumption, some mention should be made of consumer purchases and characteristics of purchases of onions. Data were collected on consumer purchases of onions through the Michigan State University Consumer Panel during the years 1952-1958. The per capita purchases of the panel families were in the neighborhood of 6.5 to 7.4 pounds of onions annually. Most of the differences between purchases as reported by the panelists and U.S. per capita consumption figures can be accounted for by factors not included in the panel purchase data. These factors include onions consumed in the form of meals eaten away from the home and in processed foods. The consumer panel data indicate that an average of 97 percent of families make onion purchases annually. Sixteen percent of families buy onions in any given week and onion purchases make up three percent of money spent for vegetables, on the average.[56]

3. Onion Processing

Almost thirteen percent of the U.S. commercial onion crop was processed into primary onion products in 1962. Some canning and dehydration of onions took place during World War II but only in the past seven years (1956-62) has there been any appreciable quantity of onions processed in the United States. Onions probably offer a high potential for increased processing due to their universality of use, disagreeableness in handling, bulkiness per unit of price, and perishability. Primary onion products produced at present include several dehydrated forms--sliced, flaked, minced, chopped, and powdered; small whole canned or frozen onions; frozen french fried onion rings; frozen diced onions; pickled onions; onion juice; and onion soups. Some of these products are relatively new, are convenience items, and do not as yet have a very large market.

a. Size and location of current processing

At the present time there are at least 41 food processing companies engaged in some type of primary onion processing. Onion processing plants are located in Massachusetts, Rhode Island, Connecticut, New York, Delaware, Maryland, Pennsylvania, Virginia, Tennessee, Georgia, Louisiana, Michigan, Illinois, Wisconsin, Nebraska, California and Oregon. Fifteen of these firms can small whole onions or french fried onion rings, 20 firms freeze onion products, 5 firms dehydrate onions, and at least one firm produces onion juice. It is estimated that 3.1 million cwt. of fresh onions are annually used by these primary onion processors.[57] Of this total approximately 2.5 million cwt. of onions are used

by dehydrators. At present onion dehydration in the U.S. is confined to California. Dehydration is increasing rapidly and at least three large plants have been built in the past four years. The principal markets for dehydrated onions are the remanufacturing market (comminuted meats, salad dressings, sauces, and pickles), restaurants and other institutions, the export market, and the Armed Forces. Onion dehydrators are able to maintain a year round operation by taking advantage of the widely varying climatic conditions throughout California to obtain year round supplies of onions. Thus the location of onion dehydration plants is presently primarily raw product oriented.

The volume of fresh onions being used for canned whole onions and canned french fried onion rings is estimated to be about .3 million cwt. per year.[58] Canning plants are located in eight different states and appear to be raw product oriented with some canning done in most of the major onion production areas. Normally the onions from commercial production areas which are too small for fresh market use make up the raw material supply for the onion canners. Canned onions are considered by most people to be a specialty item and whole boiled onions are served as primarily a holiday season dish in New England. Some major food companies are market testing frozen small whole onions and frozen stew vegetables (combination of carrots, small potatoes, and small whole onions) but no data are available as to consumer acceptance of these products.

The production of frozen french fried onion rings and frozen diced onions uses approximately .3 million cwt. of fresh onions annually.[59]

The french fried onion ring producers appear to be market oriented for transportation cost reasons. Frozen french fried onion rings are currently being produced in thirteen states usually near large population concentrations. Trade sources indicate that the major quantities of frozen onion rings currently produced are being sold to the institutional trade with small quantities entering retail markets. Frozen diced onions are being processed by a few firms in the onion producing regions of the Eastern part of the United States. This product is a recent innovation with each of the processors having started production since 1959. A limited amount of pickled onion products and onion juice are produced in the U.S. primarily for the remanufacturing market.

b. Potentials for expansion of onion processing

Some of the factors which indicate a high potential for the processing of onions are: (1) onions are almost universally used, (2) fresh onions are disagreeable to handle, (3) onions are a minor item in the consumer's total food bill, (4) onions are a bulky item per unit of price in fresh form, (5) onion production is seasonal in nature requiring storage of onions for six months of the year and (6) some preparation methods of onion products are difficult. Commercial processing of onions should offer considerable efficiences in labor, savings in waste, reduction of seasonal variation in prices to producers and consumers, and a great deal of convenience to the homemaker. Potentials for dehydrated onions appear to be very large. The remanufacturing and institutional markets for dehydrated products are far from being saturated. With the world trade in onions of 17 to 18 million hundredweight per year and the high

proportion transport cost is of the delivered price of fresh onions, world trade in dehydrated onions should greatly increase over time.[60] Frozen diced onions have gained good initial acceptance at the retail market level. Institutional acceptance of frozen diced onions will probably depend on the quality-cost relationships between frozen and dehydrated products and fresh onions.

c. Marketing problems

Any expansion in onion processing will necessarily be dependent on the ability of processors to successfully market existing or new onion products in larger quantities. Certain marketing problems are present and must be dealt with in expanding the market for any product or group of products. Problems facing onion processors include: (1) lack of knowledge of onion utilization, (2) what product forms consumers prefer, (3) what size and type of package should products be packed in, (4) what price should be charged for products, (5) should the products be promoted and, if so, how much, (6) what are the needs of the three markets for onions--retail, remanufacturing, and institutional, and (7) what will be the degree of acceptance of onion products by retail and institutional buyers. These problems were obtained from a survey of onion processors to ascertain the major problems in marketing their products. To the author's knowledge, no information is available concerning the form in which onions are used or the percentage of onions used in various dishes such as salads, relishes, stews, meat dishes, sandwiches, or onion dishes. Generally, one considers onions as a seasoning or spice, but considerable amounts of onions are also eaten as vegetables either in

onion dishes or in stews or casseroles. The ways in which onions are used and relative amounts used in each way need to be known by the onion processor to serve as a guide for the form of processed products. If most onions are used in diced form there would probably be little demand for an onion product of another form such as slices. It is possible that onions are used in enough forms that there would be a market for several product forms, each tailored to a particular onion use. This has proven true in the case of potato processing where there are many product forms, each tailored to particular use patterns. Along with product form, the potential onion processor needs to consider package type and size in designing his product. For the retail market, packages need to be attractive, properly sized, cheap and durable. Package design and color have been shown to be quite important in the appeal of a product to consumers. Packages for the institutional market must be designed keeping in mind such factors as product storage life, durability of packaging, convenience and costs of packaging material.

A very important problem to any manufacturer is the pricing of his product. In the case of onion products, they must compete in terms of price and convenience with raw onions which are available year round at widely varying prices. New onion products which are convenience items can be priced at a higher price per pound than raw onions at retail and possibly still attract a market. The question to be solved by an onion processor is how much more per pound will the consumer or institutional buyer pay for a convenient form of onions? Various means of price determination can be used such as cost pricing, market skimming, or "seat of

pants pricing." In the case of a new retail or consumer onion product which would seem to appeal to consumers, the processor may benefit by using a market skimming price or one which is higher than his costs of production. As long as a processor has no competition for a particular new product he may be able to maximize his revenue by setting his initial price at a relatively high level with the intention of lowering it when a competing processor enters the market. In the case of onion products designed for the institutional market, the price will need to be rather close to the price of raw onions since institutional buyers are probably more cost conscious than are homemakers. Another factor to be considered in price determination is the possibility of promotion of a product. In certain cases prices may be set at slightly higher levels if promotion of a product is to be quite extensive. Thus, the potential onion processor must decide if his product will be promoted and, if so, to what extent as an integral part of his price setting decision. The large variation in fresh onion prices will probably present problems to onion processors both from the standpoints of raw product procurement and competition of fresh onions with processed onion products in the market unless the processor contracts for major portions of his total needs. Processors will need to arrive at a price for their product which can be maintained throughout the year but which will enable their products to compete with fresh onions in the market. Due to present high costs of onion processing, it is likely that onion products will only be able to compete with fresh onions on a convenience and standardized quality basis rather than in terms of price, at least for the near future.

One marketing problem of food processors which has received relatively little attention in the past is meeting the needs of the institutional food market as opposed to the retail market. Most market research has dealt with the retail market with little or no attention to the preferences or buying practices of institutions. This fact is well illustrated by the following statement of the research director for a national restaurant chain. "Processors and suppliers are not yet close enough to the problems and needs of the institutional feeder to be of real assistance. They spend millions of dollars searching every phase of the home consumption food field at the retail kitchen levels, yet food raisers and processors invest nothing in studying the needs of restaurant and institutional feeding." In many ways these two markets require completely different analyses. The institutional food buyer is much more concerned with product cost per unit than is the average homemaker. Processed onion products should probably be tailored specifically for either the retail or institutional market, but certain products could be interchanged between the two markets merely by changing size and type of package and price. Onion processors are faced with the problem of determining the degree of acceptance of various onion products by both the retail and institutional markets. It was decided to concentrate this study on the institutional market for onion products. Specific questions to be studied are the acceptance of frozen diced onions, onion utilization, type and size of package desired by institutional buyers, product form desired, and what institutions would be willing to pay for processed onion products.

FOOTNOTES - CHAPTER II

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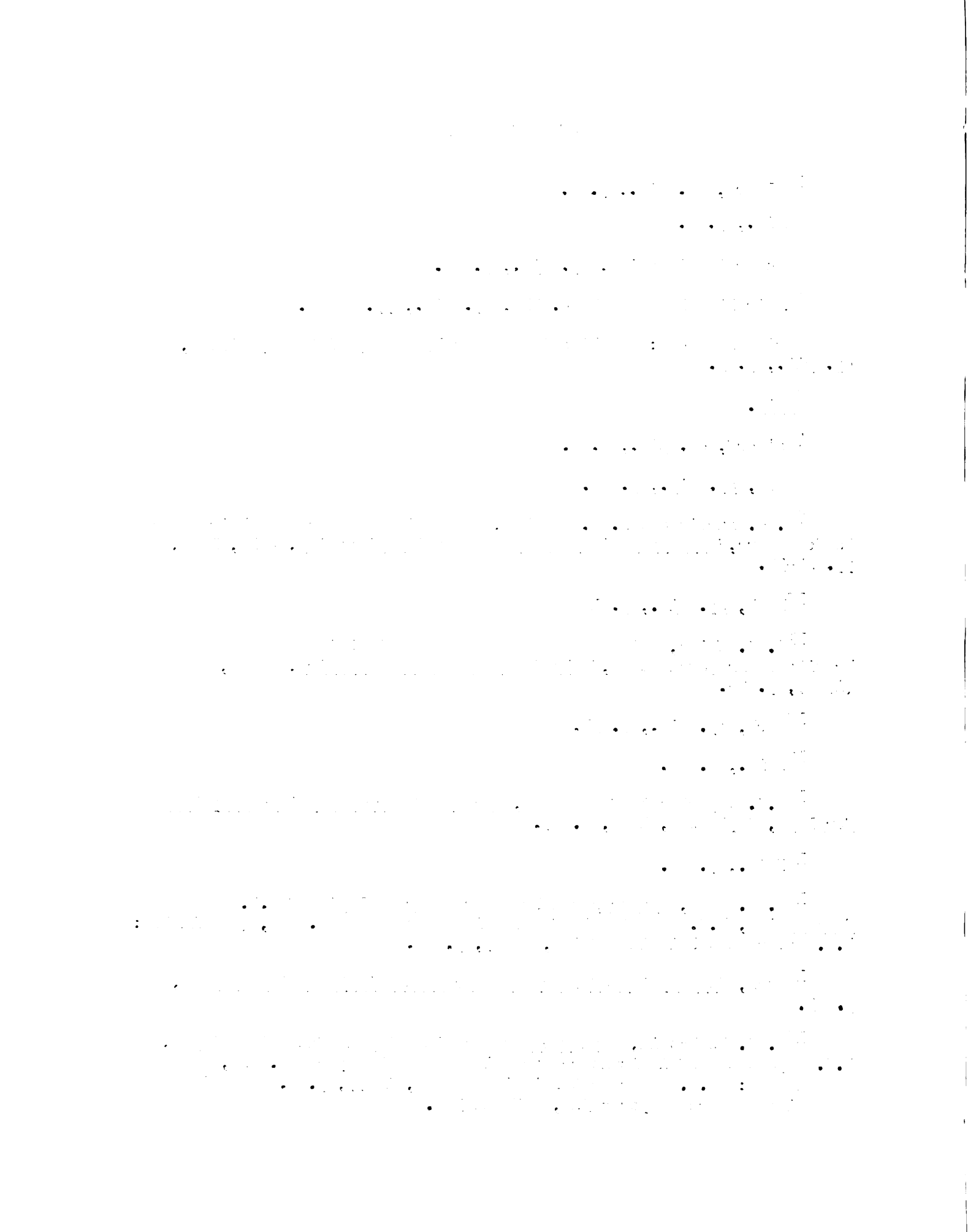

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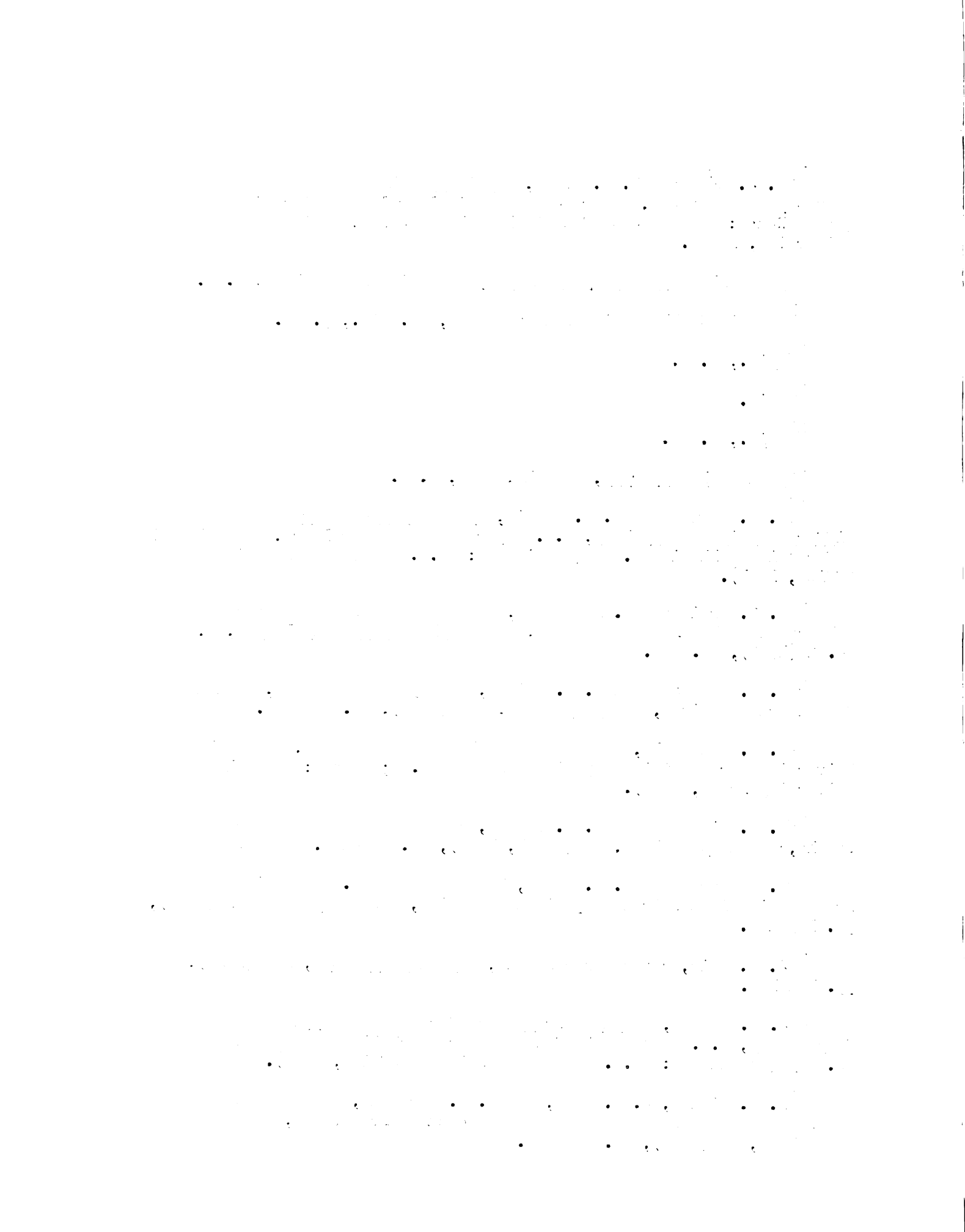

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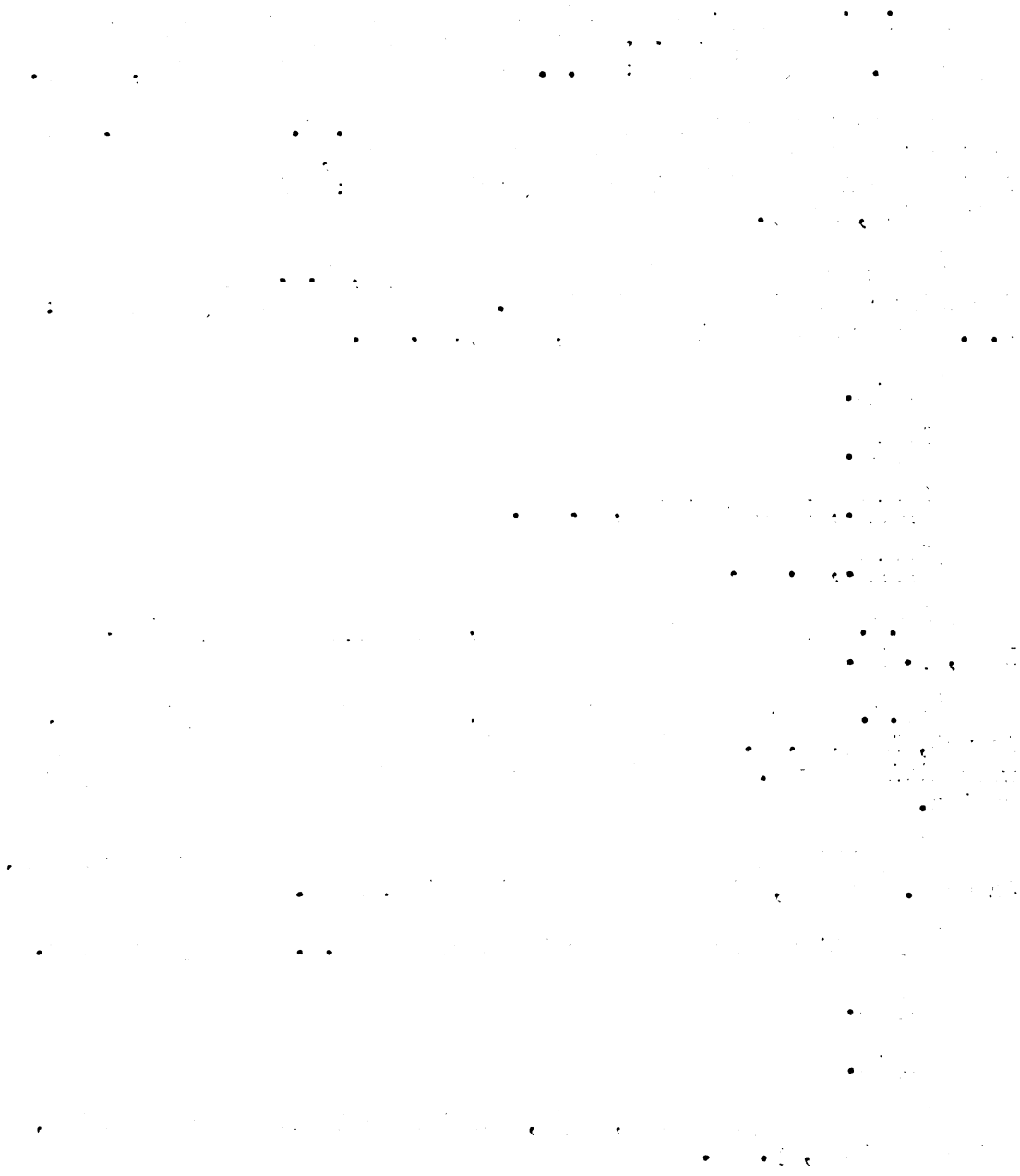


CHAPTER III

METHODOLOGY

A. Hypothesis and Assumptions

The primary questions examined in this study are the following: can an institutional sales test methodology be developed which would be workable and can a predictive model be developed using the data generated by the sales test which will serve as an accurate and low cost indicator of the institutional acceptance of new processed food products? It is hypothesized that a sales test can be developed which will generate the data needed for a predictive model to determine the institutional acceptance of new processed food products. Assumptions underlying the development of the institutional sales test methodology are as follows:

(1) It is assumed that the institutions in a selected test market or test markets are representative of all United States institutions insofar as the acceptance of new processed food products is concerned. Specifically, it is assumed that the restaurants and institutions in Detroit are representative of U.S. institutions in terms of types, sizes, ownership patterns and other factors which may affect acceptance of new processed food products.

(2) It is assumed that there will be no change in institutional sales of products which directly compete with the test product.

(3) It is assumed that a measure of the size of the "institutional market" in the test market can be developed. There are three measures of size which may be applicable: (a) number of institutions, (b) number of employees, and (c) volume of annual sales. It is assumed that one of

these measures of size can be compared to national data on the public eating place business in order to project test market sales into national sales data.

(4) It is assumed that the quality, form, technology and prices of competing products as well as promotional or sales efforts given to competing products will not change during the period in which the sales test is conducted.

(5) It is assumed that the variables of price, quality and convenience of the tested product, usage patterns of competing products, size and type of institutions in the test market, and certain unknown variables will affect the institutional acceptance of the tested product. Variables to be studied are the usage patterns of competing products and size and type of institutions in the test market. All unknown variables will be assumed to have either an unimportant or strictly random effect upon the acceptance of the tested product.

The relevance and plausability of these assumptions will be examined in a later chapter of this thesis in light of information developed through a survey of the institutional food market in Detroit, Michigan.

1. Product Tested

During the time this study was being planned and an institutional sales test method being developed, a new processed onion product, frozen diced onions was introduced at retail stores in several midwest cities independently by both a Tennessee processor and a New York processor. The product was produced by peeling raw onions, dicing them into approximately 1/4 inch cubes and quick freezing them. The frozen onions were

either individually quick frozen or broken up after freezing but prior to packaging in order to make them free flowing. The product was packed in twelve ounce polyethylene bags which were being sold at 19 cents each at retail. The product had achieved considerable sales success in the eastern part of the United States and initial sales in the midwest markets seemed to be developing well. Since this product had not been introduced to the institutional market, it presented the possibility of testing the institutional acceptance of a completely new and different onion product which had already gained some acceptance at the retail level.

This study was planned to consist of two separate but integrally related parts. The first portion was an institutional sales test designed to determine institutional acceptance of frozen diced onions and the second portion was a survey of institutions designed to determine utilization of fresh onions and all onion products and to determine the market penetration of frozen diced onions during the sales test. The institutional sales test of frozen diced onions was attempted to determine the practicality of the developed methodology for conducting institutional sales tests.

2. The Theory of Institutional Sales Testing

Since there are no published reports dealing with institutional sales testing, there is no established body of theory covering such tests as a means of predicting institutional acceptance of new products. However, there is a body of published information covering the successful use of retail sales tests as a method of predicting consumer acceptance of new products. The theory of retail sales testing is really quite

simple and rudimentary. A new product is placed in stores within a well defined test market area generally consisting of a city or standard metropolitan area. The retail sales test is closely controlled from the standpoint that product price, amount of promotion given the product and sales effort given the product are set at the same levels planned for use in national commercialization of the new product. The primary data developed in a retail sales test are the actual sales of the tested product over a specified period of time. In addition data are often collected on the prices, promotional effort, and sales volumes of directly competing products in the test market as well as consumer reactions to the tested product.

The predictive model used in retail sales testing is a very simple one which contains only four quantitative factors. These factors are sales of the tested product in the test market over a specified period of time, national sales of the tested product, the population of the test market area, and the population of the United States (or some other well defined area). The sales of the tested product are obtained from store audit procedures or product shipment records and the population figures are derived from U.S. Bureau of the Census information. Predictions of national sales of the tested product per unit of time are derived from the following equality:

$$\text{National Sales} = (\text{Test Market Sales}) \left(\frac{\text{U.S. Population}}{\text{Test Market Population}}\right)$$

In some instances the relationship between the number of households in the test market and the total number of U.S. households is used instead

of the population relationship. The relationship of numbers of households is most commonly used in predictive models for durable goods.

Since the procedure for conducting retail sales tests has been well refined and retail sales tests have proven useful for predicting consumer acceptance of new products, it seems logical to pattern an institutional sales test methodology after retail sales test methodology. If we assume that an institutional sales test should be modeled after retail test procedure then the method for conducting an institutional sales test would be as follows:

(1) Place the product to be tested on the institutional market in a well-defined test market or markets.

(2) Carefully control the selling price of the tested product, the amount of promotion given the product, and the sales effort expended on the product.

(3) Maintain records of sales volume of the tested product over a given period of time.

(4) Make projections of potential national volume of the tested product by means of a predictive model.

It was pointed out above that predictions of national sales of a new product are based on sales of the product in the test market and the relationship of the test market population to total U.S. population. This obviously assumes that there is a relationship between the acceptance (sales) of the new product and the size of the population of the test market (as well as other factors such as price, quality, and convenience of the tested product). In the case of the institutional market

there are three measures of size of the "population" of institutions within any given test market or are. These are numbers of institutions, annual volume of sales, and number of persons employed in food preparation and service. It is difficult to determine which of these three measures of size would correspond to test market population (as used in retail tests) and form the basis for a predictive model useful for predicting national acceptance of new institutional food products. It was assumed earlier that type and size of institutions in a test market would affect the acceptance of new processed institutional food products. This assumption was based on the past institutional acceptance of other new processed food products such as frozen french fried potatoes and dehydrated mashed potatoes. These products were most rapidly accepted by large, high-volume institutions and multi-unit or chain institutions. In view of this previous history and general background knowledge of the institutional food market the following is suggested as a predictive model for use in projecting national institutional acceptance of new processed food products from test market sales:

$$\text{National Institutional Sales} = \left[\text{Test Market Sales to Multi-Unit Institutions}\right] \left[\frac{\text{Annual Dollar Sales Volume of Multi-Unit Institutions in the total U.S.}}{\text{Annual Dollar Sales Volume of Multi-Unit Institutions in the test market}}\right] +$$

$$\left[\text{Test Market Sales to Single Institutions}\right] \left[\frac{\text{Annual Dollar Sales of Single Unit Institutions in the U.S.}}{\text{Annual Dollar Sales of Single Unit Institutions in the test market}}\right]$$

The accuracy of this model will be examined in a later section of this study by using it to estimate present national institutional use of dehydrated onions from survey data gathered about institutional use of dehydrated onions in the test market. The estimate derived from the predictive model will be compared with other estimates of institutional use of dehydrated onions to determine whether or not the relationship between annual dollar volume of sales of institutions in a test market and annual dollar volume of sales of total U.S. public eating places forms a valid basis for projecting institutional acceptance of a new processed food product in a test market into national potentials for the product. The best method for testing the accuracy of this predictive model would be to compare predicted national sales of the tested product to actual national sales but this would probably require several years in the case of the particular new product used in this study.

3. Data Needed

The data needed for a predictive model for acceptance of a new institutional food product include the following: (a) Sales of the tested product during a specified time period in the test market, (b) annual volume of sales of institutions in the test market (by type of institution), (c) number of institutions in the test market, (d) number of persons employed by institutions in the test market, and (e) the same above four factors for total U.S. public eating places. If the predictive model is to be based only on the relationship of sales volume in the test market to sales of total U.S. public eating places then number of institutions and number of employees would not be needed. In order to have

some check on the accuracy of the suggested predictive model the following types of data are needed: (1) amount of fresh and processed onions used by various types of institutions in the test market, (2) reactions of chefs to the use of processed onions, and (3) annual volume of business and number of employees of each institution in the test market. Additional information such as onion usage by product forms, ways in which onions are used in various foods, prices of fresh and processed onions, extent of institutional familiarity and use of processed onion products for use in various dishes, and preferences for container types and sizes was gathered because it was felt that the information would be very valuable reference material for the food processing industry.

B. Institutional Sales Test

1. Characteristics of the test market

The city used as a test market was Detroit, Michigan. Detroit is an industrial city with a city limit population of 1,670,144 and a metropolitan area population of 3,762,360. The population of Detroit is made up of 70.7 percent white, 29 percent Negro, and .3 percent other non-white races as compared to the United States population which is 88.4 percent white, 10.5 percent Negro, and 1.1 percent other non-white races. The white population of Detroit is fairly well spread over various ethnic origins such as English-Irish, German-Polish, French, Latin, Slavic, and Scandinavian-Nordic. Consumer surveys of onion usage have shown that Negroes tend to use fewer processed onions than whites, but the relatively high percentage of Negroes in Detroit was not expected to affect the acceptance of a new onion product by Detroit institutions.

Public eating establishments in Detroit cover a wide range of operations from yacht club dining rooms to sandwich stands. There are large numbers of specialty restaurants which cater to the tastes of ethnic groups such as Chinese or Greeks. Though quite diverse in nature, the institutions in Detroit, taken as a group, are probably similar to those of other large industrial cities. The 1958 Census of Business lists 2,387 eating and drinking places within the city limits of Detroit with annual sales of $126,109,000 in 1958. In the summer of 1961 there were 2,269 eating establishments on the account records of the nine major frozen food distributors serving the city of Detroit. In addition, seventy-one institutions were listed in the yellow pages of the Detroit telephone directory which were not included in the account records of the frozen food distributors. In order to have up-to-date and accurate name and address information, it was decided to define this group of 2,340 establishments as the universe of all eating places within the city limits of Detroit. This group of 2,340 feeding establishments included schools, hospitals, manufacturing plant food services, catering companies, and all types of restaurants. Thus, it covered all segments of the institutional food market as it is defined in this study. It is estimated that this group of 2,340 establishments include virtually all of the public eating places in Detroit and account for at least 95 percent of the total volume of sales by public feeding places within the city limits of Detroit.

2. Conduct of the test

In setting up the method for conducting an institutional sales test

it was felt that the test should fit into the normal marketing channel through which processed food products are supplied to the institutional market. Institutions are usually supplied by one or more wholesale distributors who normally handle a complete line of institutional items. Some distributors handle only certain types of food items such as frozen foods, dry groceries, or produce, but most distributors serving the institutional market handle certain items in most of these categories. Processed food products normally move from processors to institutions by one of two routes. If a processor has his own sales force the market chain runs from processor to distributor to institution. In other cases, where a processor does not have a sales force, the pattern of distribution is from the processor, through a food broker, to distributors, and to institutions. Brokers generally act as intermediaries between processors and distributors and are reimbursed by processors for selling their products. Brokers do not assume ownership of products and generally do not become involved in the physical handling or storage of products. Some large multi-unit institutions, such as school systems or restaurant chains, buy food products directly from processors, thus bypassing the distributor in the marketing chain, but this practice is not widespread.

A food processor with a new product to be introduced to the institutional market usually will retain a broker in any city or trade area in which he wishes to introduce his product if he does not have a sales organization of his own. The first step in introducing a new institutional product is to persuade distributors to carry the product and offer it to

institutions. Various incentives such as cash bonuses, rebates, or free merchandise may be used to entice distributors to carry a product. A processor will normally provide distributors with a supply of the new product to be distributed to institutions as free samples to expose buyers and chefs to the product. After the chefs have had a chance to try the new product, salesmen of the distributors will attempt to sell the product to the institution. Depending upon the inherent characteristics of the product its sales will either develop to a profitable level or never materialize. Perhaps the most difficult step in this process is to get distributors to carry a new product. With hundreds of items already carried in their inventories, distributors are often hesitant to take a new product on unless it appears particularly promising.

The following method was devised for conducting an institutional sales test based on the normal marketing channels for institutional food products. The method consists of the seven following steps:

(1) Distribution of product samples to selected institutions by distributor salesmen,

(2) Recording of first reactions to the product,

(3) Attempts to sell the product to institutions by distributor salesmen,

(4) Keeping weekly records of initial and repeat sales of the product to individual establishments for a period of twelve weeks,

(5) Keeping monthly records of total sales in the test market for a period of twelve months as a check on predictions of the acceptance of the tested product,

(6) Maintenance of a supply of a product in a central warehouse to be drawn on as needed to fill orders, and

(7) Survey a sample of institutions in the test market after the sales test to gather data on utilization and purchases of the tested product and competing products and to determine market penetration of the tested product.

The first procedure undertaken in arranging a test of frozen diced onions was to contact the processors of the product and secure their co-operation in supplying samples and of stocking a backup supply of the product in a Detroit freezer warehouse. Both processors agreed to co-operate fully in the test and proceeded to develop an institutional pack of frozen diced onions. One brand of the product was packed in two pound printed polyethylene bags with twelve to a case and the other brand was packed in five pound cardboard cartons with six cartons to a case. The processors supplied 800 of the two pound bags and 200 of the five pound cartons to be used as samples for the sales test. An agreement was negotiated with the processors to charge the same price per pound for their respective brands during the period of time the test was scheduled to run. The price agreed upon was 13 cents per pound to the distributors on a case lot, ex-warehouse basis. An ex-warehouse price is the price of the merchandise picked up at the warehouse and includes transportation and storage charges but not delivery. This price was not considered competitive with the going price for fresh onions but, in view of large peeling losses and high processing costs with the technology used to produce frozen diced onions, the processors were not willing to set the price any

lower. A later section of this study deals with the effects of the price on the results of the sales test. The processors also agreed to stock a back up supply of their product in a Detroit freezer warehouse to be drawn on as sales developed. An arrangement was made with the brokers for the two processors to keep records of any movements of the product from warehouse to distributors.

The nine principal frozen food distributors serving the institutional market in Detroit were contacted to explain to them the purpose and nature of the proposed sales test. The distributors all agreed to participate in the test and to cooperate in any way possible. The test method was explained to sales managers and they were asked to brief their salesmen of the way the test would be conducted, how to solicit reactions to the product, and methods of keeping records of sales. Salesmen were asked to treat the product in the same manner they would treat any newly introduced product and not to attempt any special push to sell the tested product. All distributors were requested to charge the same price for case lots of frozen diced onions but no attempt was made to control quantity discounts on the product. The 1,000 samples available for distribution were prorated to the nine distributors on the basis of the number of institutions they had on their account records. No attempt was made to select specific institutions to receive samples. Distributor salesmen were asked to pass out the samples to the institutions which were most frequent purchasers of other frozen vegetable products. It was decided that exact control of sample distribution to a pre-selected group of institutions would not be practical since it would require considerable

extra work by the cooperating salesmen. The failure to control sample distribution was expected to give an upward bias to the sales test results, but was not expected to seriously affect the accomplishment of the objectives of the test. It was necessary to strike a compromise between preciseness of results to be obtained and the amount of extra work which would be expected from the salesmen taking part in conducting the test.

Distributors were notified on the 22nd of October, 1961 that samples would be picked up from the central warehouse in preparation for the start of the sales test. Promotional leaflets explaining uses for frozen diced onions, preparation methods, and advantages of the product were attached to each sample before they were picked up by distributors. A supply of promotional leaflets were provided for salesmen to give to the institutional buyers and chefs when the sample was delivered. No other attempts were made to promote or advertise the product under the test. Copies of the promotional leaflets used are included in Appendix A. Arrangements were made to provide each salesman with an insulated carrying container to insure that samples would remain properly frozen during delivery to institutions. A supply of prepared forms was furnished each salesman for reporting sample delivery, reactions to the product, and weekly sales of the product. Sample distribution was begun on October 24 and continued through November 6, 1961. One week after the sample distribution was completed, records were collected from salesmen concerning institutions which received samples and initial reactions to the product. The price charged by distributors averaged about 18 cents per pound of

frozen onions on a case lot basis and slightly higher prices were charged for broken case sales. The price of fresh onions delivered to institutions at the beginning of the sales test was 6 cents per pound for Michigan onions and 10 cents per pound for Western onions.

Records for initial and repeat sales to individual institutions were collected from salesmen each week during the twelve week test period. In order to have a cross check, weekly records were also kept on removals from the central warehouse by each distributor during the test period. With a few exceptions, the test proceeded smoothly and according to plan.

Some difficulty was experienced in getting all samples delivered and some salesmen were slow in turning in their records of sales. Better control over the test would have been possible if fewer distributors and salesmen had been used in carrying out the test. One distributor refused to release sales records to individual accounts for the last four weeks of the test period and one distributor did not distribute the product which was given him to be sued as samples. With these two exceptions the cooperation of brokers, distributors and salesmen was excellent.

C. Onion Utilization Survey

In the summer of 1962 an onion utilization survey of Detroit institutions was conducted as a followup to the institutional sales test of frozen diced onions. It was decided to conduct the survey after the sales test was completed in order to avoid influencing the sales test results. The survey was designed to determine the amount of penetration of the potential market which had been made by frozen diced onions during the sales test and to determine the reactions of institutional chefs to

the product after it had been used on a trial basis. A master list of names, addresses and telephone numbers of Detroit feeding establishments was compiled from the account records of the nine principal Detroit frozen food distributors plus all additional public feeding places listed in the yellow pages of the Detroit telephone directory. All institutions outside the city limits of Detroit were eliminated from the list. The master list included approximately 540 establishments which were part of multi-unit operations and approximately 1800 establishments which were single-unit operations. An organization having five or more feeding places with centralized purchasing and menu planning operations was considered to be a multi-unit organization. At the time of this survey there were eleven such organizations in Detroit including the Detroit School System, four drive-in chains, three restaurant chains, two department store chains with cafeterias or lunch counters in their stores, and one drug store chain with lunch counters in each of its outlets.

It was decided to include all of the multi-unit feeding establishments in the survey since each one of these represents a substantial portion of the total Detroit institutional food market. The multi-unit organizations were separated from the single-unit establishments prior to selecting a sample from the master list. From the approximately 1800 single-unit establishments included in the master list, a simple random sample of 400 was selected to be surveyed. No effort was made to stratify the sample as to size of institution, volume of business, class of institution or any other criteria. The size of the sample was arrived

at primarily on the basis of the amount of time and money available for conducting the survey.

1. Questionnaire design

The questionnaire developed for use in the utilization survey was made up of seven principal sections. These sections were as follows: (1) General information, (2) Amount of onion usage by forms and type of onions used in various types of foods, (3) Specific questions dealing with the use of frozen diced onions, (4) Specific questions dealing with the use of dehydrated onion products, (5) Specific questions dealing with the use of french fried onion rings, (6) Specific questions dealing with the use of canned onions, and (7) Questions dealing with the potential use of all forms of onion products in various types of foods. The general information section dealt with number of employees, number of meals serves, and volume of business of the institutions. This information was gathered to serve as a basis for making projections of the utilization data to national figures. The section on onion usage was designed to determine the amounts of fresh onions andonion products purchased, relative amounts of onions used in various types of foods, prices of onions and onion products, and the form of onions used in various types of foods. The sections dealing with specific onion products were designed to determine the extent of institutional familiarity and use of the products, reasons for use or non-use, and preferences for type and size of containers for the various onion products. The last section of the questionnaire was made up of a series of questions to determine the opinions of chefs as to whether or not alternative forms

of processed onion products could possible be used in various dishes and types of foods. The questionnaire was pretested and revised three times before the final form was selected. The pretesting was done in institutional feeding establishments in Lansing, Michigan. A complete sample copy of the questionnaire used in the survey is included in Appendix A.

2. Conduct of the survey

The survey was conducted by a team of four interviewers who personally interviewed the food buyers and chefs of individual eating establishments. Since different types of feeding establishments were expected to have widely varying use patterns for onions, each institution was placed into one of nine institutional classes.[1] These nine classes were (1) drive-ins, (2) cafeterias, (3) hospitals, schools or prisons, (4) low class restaurants, (5) medium or high class restaurants, (6) private clubs, (7) coffee shops, (8) in-plant food services, and (9) other types of feeding places. The same questionnaire was used for all types of feeding establishments. The classification was done primarily to aid in the analysis and reporting of the results of the survey. Each institution was contacted by telephone to secure cooperation and to make appointments for interviews. Appointments were made two or three days in advance of the date an interview was to be conducted. Most of the appointments were set up between the hours of 9:30 a.m. to 11:00 a.m. and 2:00 p.m. to 4:30 p.m. in order to avoid meal times or periods of food preparation. This was done in an attempt to improve the cooperation of buyers and chefs and to secure the undivided attention of the respondents during the interviews. In most cases both the food buyer and head chef

or menu planner were interviewed but in some instances one person performed both functions. Information concerning purchases, and prices of onions and onion products as well as general information was obtained from the food buyers. Information relating to onion usage in various foods and suitability of various onion products for alternative uses was obtained from menu planners or chefs. If for any reason interviews could not be completed or appointments were broken, new appointments were set up and callbacks were made.

In the case of the multi-unit organizations, interviews were conducted with the food buyers and dieticians or menu planners of all eleven organizations. Information was obtained from the central offices of the multi-unit organizations since purchasing and menu planning for all units is done on a centralized basis by these organizations.

Usable questionnaires were obtained from 376 of the 400 individual feeding establishments selected for inclusion in the survey. The other 24 institutions either had gone out of business, closed for remodeling, or would not provide certain information requested from them. Questionnaires were completed on all eleven of the multi-unit organizations. The information obtained from the multi-unit organizations covers 540 separate feeding establishments in Detroit.

FOOTNOTE - CHAPTER III

[1]A distinction was made between medium or high class restaurants and low class restaurants on the basis of type of meals served, sanitation rating, average price of meals and appearance of the restaurant. To be rated medium or high class a restaurant had to have a Grade A sanitation rating, serve full course ala carte meals, and be clean and attractive in decor.

CHAPTER IV

RESULTS OF SALES TEST AND SURVEY

A. Sales Test Results

Samples of frozen diced onions were distributed during the period of October 24, 1961 to November 6, 1961 and the sales test began on November 1. The first sale of frozen diced onions under the institutional sales test was made on November 4, 1961. Sales increased from 34 cases of 24 pounds each in the month of November to 67 cases in December and to 69 cases in January. Table III shows sales in cases by months along with the number of new and repeat customers for each of the nine cooperating distributors. One of the chief advantages of the institutional sales test as a technique for determining acceptance of new food products is the fact that it provides information on the amount of repeat pruchases made. Quite often a new product will be bought as an experiment by several customers and sales figures may look very favorable initially. A new product will have limited success unless it can attract substantial numbers of repeat purchasers. Therefore, the breakdown of sales into new and repeat purchases during the sales test gives a very good picture of how well the product can hold customers and also the frequency of repeat purchases.

Sales developed in a regular pattern during the twelve weeks of the actual sales test but it was expected that more new customers would buy the product on a trial basis than actually did so. Considering the fact that approximately 850 individual institutions received samples of the product it was surprising that only 37 establishments made a trial

TABLE III. ° RESULTS OF INSTITUTIONAL SALES TEST, SALES IN CASES[a] AND NUMBER OF NEW AND REPEAT PURCHASES

	° November			December			January			Feb.	Mar.	Apr.	May
	Cases	Customers		Cases	Customers		Cases	Customers		Cases	Cases	Cases	Cases
Distributor	Sold	New	Repeat	Sold	New	Repeat	Sold	New	Repeat	Sold	Sold	Sold	Sold
1	6	3	1	2		1				5			
2	4	4		8	2	2	4		2			10	
3	8	7		12	4	4	20	2	5	5	15		10
4	5	2		40		2	45	1	2				
5	6	4											
6	5	7	1	5	1	2							
7													
8													
9													
Totals	34	27	2	67	7	11	69	3	9	10	15	10	10

[a]Cases weigh 24 pounds net weight each.

purchase of the product. On the basis of the twelve week sales test a processor would not be expected to be overly enthusiastic about this product's acceptance at the institutional level. By projecting the monthly sales of January of 69 cases into a national figure, procssors could expect an annual sales volume of 28,152 cases of frozen diced onions or 675,648 pounds at the institutional market level. This projection assumes the following delivered prices for onions and onion products: fresh onions, 8¢ per pound; frozen diced onions, 18¢ per pound; and dehydrated onions, 80¢ per pound. Any projections beyond the actual test market are usually subject to considerable error and in this case we cannot be certain if dollar volume of sales is an accurate indicator of the amount of onion usage of an institution or of the acceptance of a new food product.

This projection is made on the basis of annual dollar volume of public eating places included in the sales test as compared to dollar volume sales of all U.S. "public eating places" according to the formula below.

$$\text{U.S. Potential Sales} = \frac{828 \text{ cases annually}}{.0294}$$

U.S. Potential Sales = 28,152 cases annually (24 # net)

Where .0294 = the proportion of dollar sales of total U.S. public eating places accounted for by Detroit institutions.

(This is a more easily presented form of the predictive model equation presented previously in Chapter 3, p. 41.)

There are several possible reasons why less than five percent of the institutions receiving samples of frozen diced onions in the sales

test made a trial pruchase. Among these could be inferior product quality, restricted product adaptability, institution shortage of freezer storage space, resistance to change among chefs and buyers, lack of sales effort by distributors' representatives, and price relationships between frozen diced onions and other onion products. Since institutions are quite cost conscious, the primary reason for the small number of initial sales was probably due to price. During the time the test was being conducted the equivalent of an 18¢ per pound of frozen diced onions could be obtained from fresh onions for about 13-14¢ including peeling losses and labor costs and from dehydrated onions for about 13¢ While product quality and convenience might be superior in frozen onions, an institutional buyer would have to weigh convenience and product quality rather highly in order to make a rational purchase of frozen diced onions at a cost of 4-5¢ per pound more than other forms. In gathering the reactions of chefs and buyers to frozen diced onions the most frequent complaint was high price. Some chefs said that the product had poor appearance after thawing or cooking but most chefs rated the quality of the product as quite high.

Table III shows that sales of frozen diced onions fell from 69 cases during the month of January, 1962 to an average of roughly 10 cases per month for the next six months. On February 7 the primary processor distributing the product in Detroit raised the price to distributors from 13¢ to 20¢ per pound. This raised the prict to institutions to 25-27¢ per pound as compared with a price of 13-14¢ for the equivalent amount of fresh onions.[2] There is no way of determining how high the instit-

utional sales of frozen diced onions in the test market would have gone over a longer time period if the price had remained constant. It can only be assumed that the price rise shut off sales increases before a clear picture of acceptance had emerged.

The effect of various factors other than price on sales of frozen diced onions is extremely hard to evaluate. Institutions are at present making extensive use of frozen foods of all kinds. They are using large amounts of frozen peas, potato products, and other vegetables as well as many portion control frozen meats. Storage space for frozen foods in all but the newest restaurants is probably inadequate to handle the ever expanding volume of frozen food used. This problem of storage space may have had an adverse effect on the sales of frozen diced onions since they were competing with relatively more important food products for frozen food storage space available.

The product form of frozen diced onions is not suitable for all uses of onions. The relative amount of onions used by institutions in diced form is about 59 percent of total onion usage but certain uses require large chunks of onion.[3] Large pieces of onion are normally used in stews, as flavoring for roasts, to make onion rings and as slices on sandwiches. A survey of restaurants concerning the form of onion desired for various uses indicated that diced onions would be suitable for most uses of onions but would not be preferred for certain specific uses. Frozen diced onions would not be as adaptable to all uses as fresh onions but could be adapted to the same general uses as dehydrated onion products which are also in diced form.

A factor which commonly affects the success of any new product is the general attitude of resistance to change. Many chefs form habits of using a particular type of product such as fresh vegetables and are not interested in trying new products. All of these factors can have an effect on a new products' acceptance and they probably had some effect on the sales test of frozen diced onions.

From the experience gained in conducting this institutional sales test several modifications can be recommended for incorporation in future tests of this type. From the standpoint of maintaining good control over the test it would probably be wise to work with only one or two distributors serving the institutional trade in a test city. This would cut down on the number of salesmen keeping records of sales and make possible better control over distribution of product samples. Thorough briefings of all salesmen involved in the test and some means of compensating them for the work of record keeping would probably improve cooperation by the salesmen. A more important modification of the test procedure would be the use of two or more test markets. The same test should be run in at least two cities with the product priced at a different level in each test city. This would provide information about the effect of price on sales of a new product and enable the food processor to determine the proper price to charge for his product in order to obtain a profitable sales volume. In the case of the Detroit sales test no information was gained as to what sales of frozen diced onions would have been if the price had been set at a lower level. A complete procedure for conducting institutional sales tests will be

outlined in the final chapter of this study.

B. Results of Onion Utilization Survey

The onion utilization survey conducted in Detroit included 376 single-unit feeding establishments and 11 multi-unit feeding firms, with 540 individual feeding establishments. In order to determine the onion usage of various types of institutions it was decided to analyze and present the data from the single-unit and multi-unit groups separately. In later sections of this study, the data from both single-unit and multi-unit groups are combined for the purpose of predicting market potentials for various onion products and for making projections of onion utilization.

1. Single-unit establishments

The single-unit establishments contacted in the institutional survey of onion utilization were subjectively placed into one of nine classes by the interviewers during the interviews. Of the 376 institutions interviewed, there were 27 drive-ins, 21 cafeterias, 19 hospitals or private schools, 110 low class restaurants, 71 medium or high class restaurants, 20 private clubs, 56 coffee shops, 20 in-plant food services, and 32 in an "other" category. (See Table IV) Institutions included in the "other" category were hot dog stands, sandwich stands, bars, etc. This sample of 376 institutions was probably larger than would be necessary to get a sample representative of all institutions in a test market. The sample was purposely made large because of a lack of knowledge about the relationship between size and type of institution and onion usage. An interesting and useful followup to this study would

be a process of subsampling to determine the minimum size sample of institutions needed in a test market to be representative. It is possible that a small sample stratified by size or type of institution would yield satisfactory results.

The yearly volume of business, number of employees and number of meals served per week at morning, noon and evening are presented for each class of single-unit institutions included in the survey in Table IV. In some ways these three characteristics of institutions are all measures of relative size of the various classes of institutions. The dollar volume of sales of private schools and hospitals is not exactly comparable to the dollar volumes of the other classes since feeding operations in these institutions are to a certain extent non-profit ventures.

All of the 376 institutions interviewed used some onions each week. Table V presents a summary of the number of pounds of fresh onions used per week, pounds of processed onion products used per week in fresh onion equivalent, total pounds of all onions used per week in fresh onion equivalent, and price paid for fresh onions per pound for each institutional class. Conversion ratios used for putting processed onion products into fresh onion equivalent are as follows: (1) one pound of dehydrated onion products equals 8 pounds of fresh onions, (2) one pound of undrained canned onions equals one pound of fresh onions, (3) one pound of frozen diced onions equals 1 1/2 pounds of fresh onions, and (4) one pound of frozen onion rings equals one pound of fresh onions.[4] The largest users of fresh onions and total onions were private clubs, medium or high class restaurants, drive-ins, and schools or hospitals in that order. The

TABLE IV. CHARACTERISTICS OF SINGLE UNIT FEEDING ESTABLISHMENTS IN ONION UTILIZATION SURVEY BY TYPE OF INSTITUTION, YEARLY ANNUAL FOOD SALES, NUMBER OF EMPLOYEES AND NUMBER OF MEALS SERVED PER WEEK[a]

Class of Institution	Number	Yearly Sales[b]		Number of Employees		Number of Meals Served per Week					
						Morning		Noon		Evening	
		Av.	Total	Av.	Total	Av.	Total	Av.	Total	Av.	Total
Drive-In	27	167	4509	14	378	560	15120	1628	43956	1693	45711
Cafeteria	21	119	2499	9	189	714	14994	1946	40866	1324	27804
Hospital or School	19	206	3914	52	988	2067	39273	3297	62643	2313	43947
Low Class Restaurant	110	42	4620	5	550	404	44440	599	65890	550	60500
Medium or High Class Restaurant	71	214	15194	32	2272	674	47854	1085	77035	1263	89673
Private Club[c]	20	397	7940	33	660	873	17460	1709	34180	1066	21320
Coffee Shop	56	68	3808	7	392	523	29288	984	55104	671	37576
In-Plant Restaurant	20	106	2120	10	200	1697	33940	2177	43540	962	19240
Others	32	70	2215	8	251	557	17267	655	20305	708	21948
All Classes	376	124.5	46819	15.6	5880	691	25936	1183	443519	981	367719

[a]A firm with less than five establishments and without centralized menu planning or food purchasing was considered a single-unit firm.

[b]In thousands of dollars.

[c]Includes five semi-private, exclusive restaurants.

TABLE V. ONION USAGE OF SINGLE UNIT INSTITUTIONS, BY CLASS OF INSTITUTION AND ALL SINGLE-UNIT INSTITUTIONS

Class of Institution	Pounds of Fresh Onions Used Per Week		Pounds of Processed Onions Used per Week[a]		All Onion Usage per Week[b]		Price Paid for Fresh Onions
	Av.	Total	Av.	Total	Av.	Total	
Drive-In	108	2916	12	324	120	3240	.07
Cafeteria	83	1743	17	357	100	2100	.07
Hospital or School	91	1729	25	475	116	2204	.06
Low Class Restaurant	38	4180	3	330	41	4510	.08
Medium or High Class Restaurant	117	8307	14	994	131	9310	.07
Private Club	106	2120	44	880	150	3000	.07
Coffee Shop	41	2296	12	672	53	2968	.08
Mfg. Plant Cafeteria	80	1600	17	340	97	1940	.07
Others	48	1559	5	155	53	1704	.08
All Classes	70.3	26440	12	4527	82.4	30967	.07

[a]In pounds of fresh onion equivalent

[b]In pounds of fresh onion equivalent

amount of onion usage is probably related to the type of meals served by the various classes of institutions. Large amounts of onions are used on hamburgers by drive-ins and the other large users serve full course meals which require more onions for seasoning than would be needed for short orders or sandwiches other than hamburgers. Most institutions buy onions from produce dealers, but some small restaurants purchase small quantities of onions from retail grocery stores. The average price paid by all institutions for fresh onions at the time of the survey was seven cents per pound. The price of fresh onions renged from four cents per pound to seventeen cents per pound with schools paying the lowest price and small, low class restaurants paying the highest.

There were large differences in the average amounts of processed onion products used by the various classes of institutions with low class restaurants and "other" institutions using virtually no processed onion products. This finding bears out the assumption made earlier that size and type of institution would affect the acceptance of frozen diced onions. There appears to be a relationship between the type of institution and the amount of processed onions used. The private clubs, hospitals, and cafeterias which presently use processed onions would probably accept a new processed product more readily than those classes of institutions using few processed onions presently.

Of the 376 institutions interviewed, 105 institutions or 28 percent of the total used some form of processed onions. Fifty institutions regularly used canned onions, 46 regularly used dehydrated onion

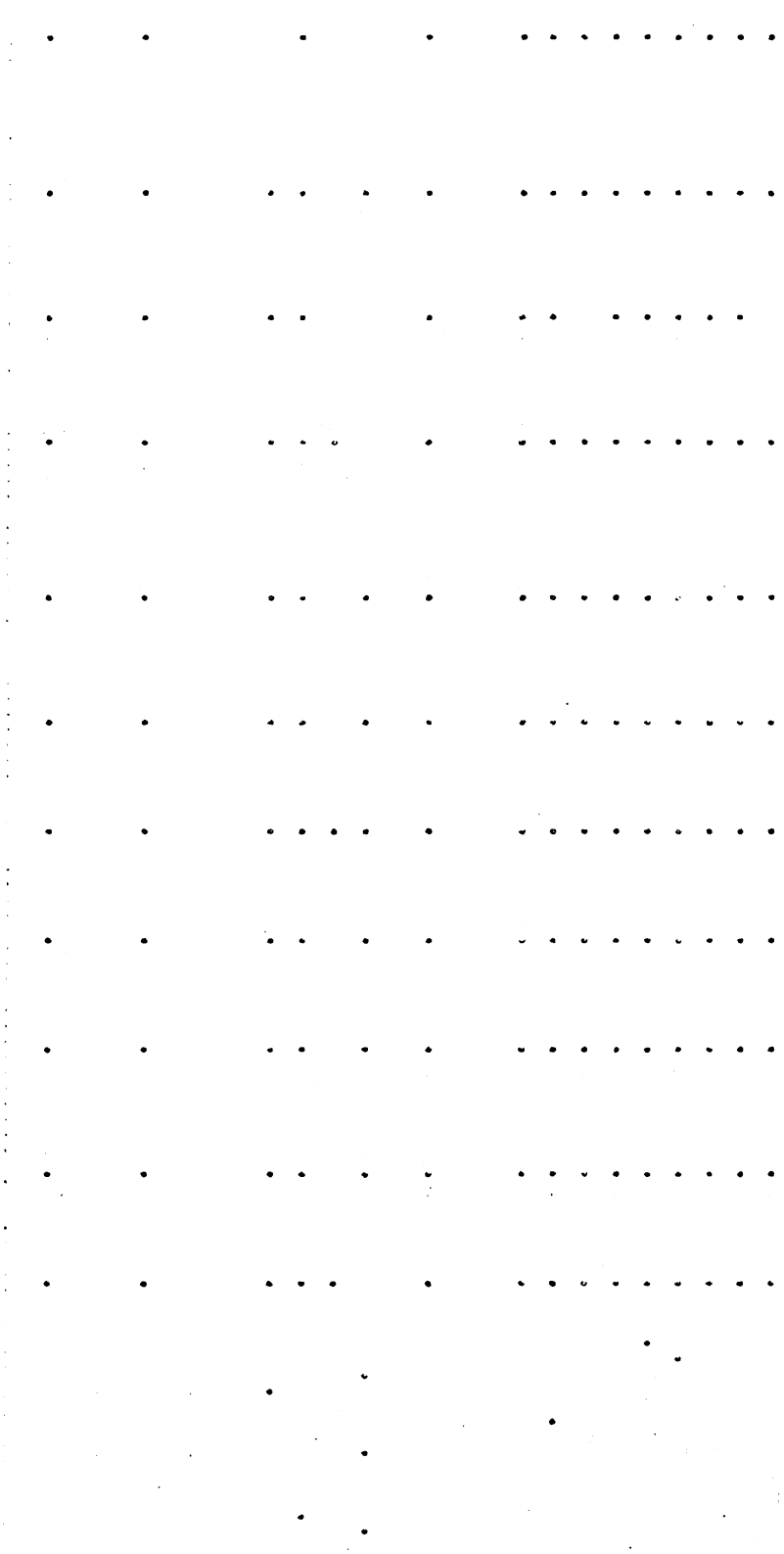
products, 18 used frozen french fried onion rings, and four institutions used frozen diced onions.

Prior to this survey there was no accurate statistical information available, to the author's knowledge, concerning the way in which onions are used by institutions. One of the important factors in the success of a processed food product is that the product form be suitable for the major uses of the food. It is known that onions are used in several types of dishes or foods and in several forms. The most common forms in which onions are used are diced, sliced, whole or quartered, and rings. The primary dishes or foods for which onions are used are the following: (1) on sandwiches, (2) in salads or relishes, (3) in soups and gravies, (4) in stews, (5) fried with steak or liver, (6) in meatloaf, (7) as flavoring for roasts or other baked meats, (8) as onion rings, (9) as creamed onions, (10) in spaghetti sauce, and (11) in other miscellaneous uses. The chefs or manu planners of all establishments interviewed in this survey were asked to indicate the foods or dishes in which they used onions and the relative amounts used in each type of food or dish. A summary of the percentage of total onions used in various types of foods is given in Table VI for each class of institution, for all single-unit establishments, for all multi-unit establishments, and for all institutions included in the survey.

The apparent large differences in the use patterns between classes of institutions are due to the differences in types of food served by different classes of institutions. Drive-ins which serve primarily hamburgers or short orders use 47.8 percent (on a weighted basis) of

TABLE VI. PERCENTAGE OF ONIONS USED IN ELEVEN TYPES OF FOODS BY CLASS OF INSTITUTION, ALL SINGLE-UNIT ESTABLISHMENTS, ALL MULTI-UNIT ESTABLISHMENTS, AND ALL INSTITUTIONS

Class of Institution	Sandwiches	Salads	Soups	Stews	Fried W/Meat	Meat-Loaf	Flavoring for Baked Meats	Onion Rings	Creamed Onions	Spaghetti Sauce	Other
Drive-Ins	47.8	1.0	2.2	.2	1.7	.2	1.0	45.1	0	.4	.4
Cafeterias	5.4	4.7	19.2	17.0	19.7	8.5	9.5	.8	5.0	5.5	.7
Hospitals	8.4	8.2	27.7	9.0	5.2	10.5	15.3	4.5	5.0	3.4	2.8
Low Class Rest.	29.5	3.8	13.4	9.0	17.5	6.0	6.6	3.5	1.0	4.0	5.7
High Class Rest.	12.0	6.1	20.0	12.5	9.7	5.7	7.7	14.6	3.2	4.2	4.3
Private Clubs	2.6	1.8	52.0	9.5	7.6	3.2	5.0	11.4	4.0	2.3	.6
Coffee Shops	49.6	4.4	12.0	7.0	6.2	6.5	6.1	3.8	0	2.4	2.0
Plant Cafe.	52.3	1.6	20.5	7.0	6.3	5.0	2.0	2.0	1.0	2.0	.3
Other	39.0	6.0	11.0	7.0	9.0	7.6	7.3	4.0	1.5	3.5	4.2
All Single-Unit Establishments	25.5	4.5	17.3	9.0	9.8	6.4	6.4	12.1	2.5	3.5	3.0
Det. Sch. Sys.		12.0	28.0	10.0	5.0	20.0	20.0			5.0	
Drive-In Chains	71.7				.4			27.9			
Rest. Chains	3.2	.9	14.2	9.6	16.7	30.9	8.3	4.6	4.6	3.7	3.3
Drug or Dept. Store Chains	48.0	4.8	9.1	14.3	4.4	4.7	11.0	.3	.8	2.6	
All Multi-Unit Establishments	50.5	2.6	6.7	7.6	4.3	6.6	6.5	12.2	.9	1.7	.4
All Institutions in the Survey	43.5	3.1	9.6	8.0	5.9	6.4	6.4	12.3	1.4	2.2	1.2



their onions on sandwiches and 45.1 percent as onion rings. Institutions which serve full course meals, such as cafeterias, hospitals and high class restaurants, use more onions for soups and stews and as flavoring in meatloaf or baked meat dishes. The wide differences in onion usage patterns of various types of institutions indicate that the use of a sample containing many types and sizes of institutions was necessary to obtain meaningful data on the way onions are used. A stratified sample could have been used to cut down on the size of the total sample while still yielding accurate usage data.

Considering the onion use of all single-unit institutions combined, the percentages used in the various foods are as follows: (1) sandwiches, 25.5 percent; (2) soups or gravies, 17.3 percent; (3) onion rings, 12.1 percent; (4) fried with steak or liver, 9.8 percent; (5) stews, 9 percent; (6) meat flavoring, 6.4 percent; (7) meatloaf, 6.4 percent; (8) salads or relishes, 4.5 percent; (9) spaghetti sauce, 3.5 percent; (10) other uses, 3 percent; and (11) creamed onions, 2.5 percent. (See Table V1) The use of onions by multi-unit establishments is 50.5 percent on sandwiches, 12.2 percent onion rings, 7.6 percent for stews, 6.7 percent in soups, 6.6 percent in meatloaf, 6.5 percent for meat flavoring, 4.3 percent for fried onions, 2.6 percent in salads, 1.7 percent in spaghetti sauce, .9 percent in creamed onions, and .4 percent for other uses. (See Table V1)

Perhaps the best indication of onion use patterns of the institutional market can be obtained from the usage information of all establishments included in the Detroit survey. The amounts of onions used

in the 11 food groups by all 376 single-unit establishments and the 540 establishments of the multi-unit firms were combined to give the total amount of onions used per week by these 916 separate feeding establishments covered by the survey. The percentage of total onions used for various foods by all institutions combined was as follows: (1) sandwiches, 43.5 percent; (2) onion rings, 12.3 percent; (3) soups and gravies, 9.6 percent; (4) stews, 8 percent; (5) meat flavoring, 6.4 percent; (6) meatloaf, 6.4 percent; (7) fried onions, 5.9 percent; (8) salads or relishes, 3.1 percent; (9) spaghetti sauce, 2.2 percent; (10) creamed onions, 1.4 percent, and (11) other uses, 1.2 percent. (Table VI) It was mentioned above that the form in which onions are used is important as well as the type of food in which they are used. Of the total onions used by the institutions covered in this survey, 59 percent are used in diced form, 15.7 percent are used in whole or quartered form, 12.3 percent are used in onion ring form, and 13 percent are used in sliced form. It is conceivable that dices onions could be used in place of part of the onions presently used in whole or quartered form and those used in sliced form. The maximum percentage of institutional onion usage which could be in diced form would be approximately 75 percent of total usage.

At present, most of the onions used for processed onion products are pungent in nature with the exception of those used for frozen french fried onion rings. Special varieties of onions with high pungency and high solids content have been developed in California in an effort to improve the flavor level of dehydrated onion products. The chefs inter-

viewed in Detroit were asked to give their preferences for sweet or pungent onions for use in ten types of dishes or foods. At least 70 percent of the chefs stated a preference for sweet onions for use in all types of dishes. Of those chefs preferring sweet onions, the major reasons cited for their preference were flavor and size with flavor mentioned by about 150 respondents. The major reasons given for preferring pungent onions were flavor and price. Either this question was misinterpreted by the respondents or there is a discrepancy between the preferences of the chefs and the buying practices of institutions. Discussions with several produce dealers in Detroit have revealed that 60-75 percent of the onions bought by institutions in Detroit are of the late-summer, pungent type. Since pungent onions are generally cheaper, the chefs may use the less preferred pungent onions as a means of reducing costs.

Chefs were asked to state their preference for either fresh onions or some form of processed onions for all onion uses. Of the 371 chefs who stated a preference, 351 preferred fresh onions and 20 preferred processed onions. The major reasons given for preferring fresh onions and the number of respondents who gave each of the reasons is as follows: (1) economy, 33; (2) convenience, 16; (3) flavor, 189; (4) texture, 14; (5) habit, 37; and (6) other reasons, 40. Of the 20 chefs who preferred processes onion products for general use, 16 of them listed convenience as the reason for their preference. Information was solicited from the institutions concerning the peeling and waste loss from the use of fresh onions. One-hundred and fifteen institutions reported a peeling loss of

under five percent, 130 institutions reported a 5-9 percent loss, 95 reported a peeling and waste loss of over 20 percent.

a. Responses to Questions on Frozen Diced Onions

A group of questions were included in the questionnaire to determine the familiarity and use of frozen diced onions. Of the 376 institutions interviewed, 182 had seen frozen diced onions and 194 had not seen or heard of the product. One-hundred and six institutions or 28 percent of the total number interviewed had tried at least a sample of frozen diced onions. Reasons given for trying the product and the number of times each was mentioned were (1) free sample, 79; (2) convenience, 10; and (3) other reasons, 9. There were four institutions regularly using frozen diced onions at the time the survey was conducted. Reasons mentioned for failure to try frozen diced onions were lack of freezer space, habit, poor quality of the product, and high price of the product. The reason most commonly mentioned for not trying the product was habit or customary use of other forms of onions. One-hundred fifty-three responses were obtained regarding preferences for the type of container for packing frozen diced onions. One-hundred twenty institutions preferred polyethylene bags, 21 preferred paperboard boxes, and 12 preferred some other type of container such as aluminum foil bags or metal containers. This preference was probably influenced by the fact that most of the samples of frozen diced onions distributed during the sales test were packed in polyethylene bags. There was little agreement as to the size of container preferred for frozen diced onions. Forty-two

chefs preferred one pound packages, 37 chefs preferred two pound packages, 12 preferred three pound packages, and 55 chefs preferred packages of five pounds or more.

b. Responses to Questions on Dehydrated Onions

Dehydrated onions are probably the most well known of any of the processed onion products. Two-hundred sixty-two institutions, or 70 percent of the total number interviewed, were familiar with some form of dehydrated onions. The first dehydrated onion products were introduced to the institutional market shortly after the end of World War II. Of the 262 institutions who had seen dehydrated onions, 56 were exposed to them prior to 1950, 60 institutions saw them between 1951 and 1956, 71 saw them between 1957 and 1959 and 67 saw them since 1960. One-hundred ninty-one institutions have tried dehydrated onion products since 1948 with 110 of these trials occuring since 1957. At the time of this survey, 46 institutions were using some form of dehydrated onions on a regular basis. Reasons mentioned by the chefs for trying dehydrated onion products were: (1) free samples, 73; (2) convenience, 43; (3) good flavor, 6; (4) reasonable price, 7; and (5) other miscellaneous reasons, 47. Institutions who had tried dehydrated onion products gave the following reasons for discontinuing their use: (1) poor flavor, 44; (2) high price, 16; (3) poor appearance, texture, or quality, 12; (4) inconvenient to use, 6; and (5) other miscellaneous reasons, 43. Several institutions do not use dehydrated onions regularly but keep a supply on hand for use when they temporarily run out of fresh onions.

c. Responses to Questions on French Fried Onion Rings

French fried onion rings are carried at least once per month on the menus of 154 of the 376 single-unit institutions interviewed in this survey. Onion rings are continuously on the menu of 101 establishments and 51 of these institutions regard french fried onion rings as a "specialty of the house." Onion rings are served as a side dish by 87 institutions, are used as a garnish by 49, and are used both ways by 19 institutions. One-hundred thirty-six institutions make their own onion rings from fresh onions and 18 regularly use partially cooked and frozen onion rings. A total of 74 out of 376 institutions have tried using frozen onion rings during the past five years. The chief drawbacks to the use of frozen onion rings and the number of times mentioned were: (1) poor flavor or breading, 53; (2) poor texture, 35; (3) hard to prepare, 22; (4) high price, 16; and (5) others, 18. Out of 145 chefs who stated a preference between frozen and fresh onion rings, 115 preferred fresh and only 30 preferred frozen rings. It seems likely that certain technological problems causing poor quality in frozen french fried onion rings will need to be corrected before the institutional market for this product can reach its potential level. An attempt was made to ascertain what chefs prefer in terms of breading, ring size, package size, and degree of processing for processed onion rings. Since there seems to be a good institutional market potential for frozen onion rings, it was felt that the preferences of chefs could give valuable guidance to onion processors for future improvements of this product.

Chefs of 177 institutions stated preferences for degree of breading

desired on onion rings with 127 preferring light breading and 50 preferring heavy breading. The breakdown obtained on size of ring preferences was as follows: 10 chefs prefer rings under two inches in diameter, 169 chefs prefer rings from two to three inches in diameter, and 100 chefs prefer rings of four inches or more in diameter. The sizes of packages and number of chefs preferring each were: one pound, 28; two pounds, 29; five pounds or more, 24; and portion pack, 12.

Chefs were asked to state their preferences among seven possible types of processed onion rings. The number of chefs preferring each type was: (1) raw, breaded, and frozen- 96; (2) raw, unbreaded and unfrozen - 62; (3) raw, breaded and unfrozen - 46; (4) breaded, partially cooked and frozen - 35; (5) raw, unbreaded and frozen - 25; (6) breaded, fully cooked and frozen - 10; (7) breaded, partially cooked and unfrozen - 8. Based on the chefs' preferences, the most acceptable type of processes onion ring could probably be described as follows: blanched, frozen rings of 2-3 inches in diameter with light breading and packed in boxes of one pound and five pound sizes.

d. Responses to Questions on Canned Onions

Fifty of the Detroit institutions interviewed are regularly using canned onions. These are primarily used for soups, stews, and creamed onions. Of the 376 institutions surveyed, 65 of them carry creamed onions on their menu at least once per month. One-hundred seventeen institutions have tried canned onions at some time within the past five years. Most of the institutions having tried canned onions are those which serve complete dinners or full course meals. When asked to give

reasons for not trying canned onions, 180 institutions of the 259 who have not tried canned onions mentioned that they do not serve any primary onion dishes or dishes which require whole onions. Chefs were asked to state their preferences among various sizes of canned onions and types and sizes of containers for canned onions. One-hundred four chefs preferred canned onions of one-half inch diameter, 55 preferred onions of one inch diameter, and 10 preferred onions over one inch in diameter. The overwhelming preference in container type and size for canned onions was the number 10 size metal can. Only 12 out of 154 chefs stating a preference for container size mentioned any other than a number 10 can.

e. Possible Use of Processed Onion Products

One of the most important factors affecting the institutional potential for processed onion products is the opinion of institutional menu planners and chefs about the use of processed onion products in various types of foods. In the Detroit institutional survey, the chefs or menu planners of all establishments were asked whether or not they thought frozen diced onions, dehydrated onions, and canned onions could be used in a variety of dishes and foods. Respondents were asked to ignore price differentials between the processed products and fresh onions. Responses to these three questions are summarized in Tables VII, VIII, and IX.

At least 65 percent of the responding chefs felt that frozen diced onions could be used for all the listed foods except sandwiches. Only 52 percent of the chefs felt that frozen diced onions could be used on sandwiches. At least 62 percent of the chefs said that dehydrated onions

TABLE VII. OPINIONS OF DETROIT CHEFS ON THE POSSIBLE USE OF FROZEN DICED ONIONS IN NINE TYPES OF FOODS, BASED ON RESPONSES TO THE FOLLOWING QUESTION: CAN FROZEN DICED ONIONS BE USED IN THE FOLLOWING FOODS?

	Yes	No	Total Responses	% Yes
a) On Sandwiches	164	153	317	52
b) Salads or Relishes	203	113	316	64
c) Soups or Gravies	291	33	324	90
d) Stews	266	58	324	82
e) Fried Onions for Steak or Liver	250	70	320	78
f) Meatloaf or Stuffings	292	32	324	90
g) Flavoring for Pot Roasts, Baked Meats or Other Meat Dishes	273	51	324	84
h) Creamed Onions or Other Onion Dishes	200	105	305	66
i) Spaghetti Sauce	281	37	318	88

TABLE VIII. OPINIONS OF DETROIT CHEFS ON THE POSSIBLE USE OF DEHYDRATED ONION PRODUCTS IN NINE TYPES OF FOODS, BASED ON RESPONSES TO THE QUESTION: CAN DEHYDRATED ONIONS BE USED IN THE FOLLOWING FOODS?

	Yes	No	Total Responses	% Yes
a) On Sandwiches	134	177	311	43
b) Salads or Relishes	160	146	306	52
c) Soups or Gravies	286	30	316	91
d) Stews	256	60	310	81
e) Fried Onions for Steak or Liver	219	93	312	70
f) Meatloaf or Stuffings	279	37	316	88
g) Flavoring for Pot Roasts, Baked Meats or Other Meat Dishes	261	54	315	83
h) Creamed Onions or Other Onion Dishes	188	115	303	62
i) Spaghetti Sauce	262	46	308	85

TABLE IX. OPINIONS OF DETROIT CHEFS ON THE POSSIBLE USE OF CANNED ONIONS IN NINE TYPES OF FOODS, BASES ON RESPONSES TO THE QUESTION: COULD CANNED ONIONS BE USED AS A SUBSTITUTE FOR FRESH ONIONS IN THE FOLLOWING FOODS?

	Yes	No	Total Responses	% Yes
a) On Sandwiches	74	243	317	23
b) Salads or Relishes	118	200	318	37
c) Soups or Gravies	275	50	325	85
d) Stews	296	32	328	90
e) Fried Onions for Steak or Liver	200	122	322	62
f) Meatloaf or Stuffings	250	74	324	77
g) Flavoring for Pot Roasts, Baked Meats or Other Meat Dishes	255	71	326	78
h) Creamed Onions or Other Onion Dishes	292	30	322	91
i) Spaghetti Sauce	245	76	321	76

could be used for all foods other than sandwiches, salads or relishes. Forty-three percent said that dehydrated products could be used in salads or relishes. Slices of raw onions are commonly used on certain types of sandwiches, but drive-ins use dehydrated onions extensively on hamburgers. Sixty-two percent or more of the responding chefs said that canned onions could be used in all foods except sandwiches and salads or relishes. Thirty-seven percent of the chefs felt that canned onions could be used in salads or relishes and only 23 percent said that canned onions could be used for sandwiches.

At the time the survey was conducted, dehydrated onions were about the same price as fresh onions on an equivalent basis, but frozen diced onions and canned onions were considerably more expensive than fresh onions. It is possible that in the future both dehydrated and frozen diced onions will be competitive with fresh onions on a price basis. In a later section of this chapter estimates of the potential market for processed onion products will be developed by using the opinions of chefs concerning the substitutability of processed onions for fresh onions.

2. Multiple-unit organizations

Due to the small number of multi-unit organizations covered by this survey and the diversity of their operations the survey results obtained from the multi-unit organizations will be presented for each firm. A separate summary of the information obtained as a result of the survey will be presented for each of the eleven organizations without revealing their identities.

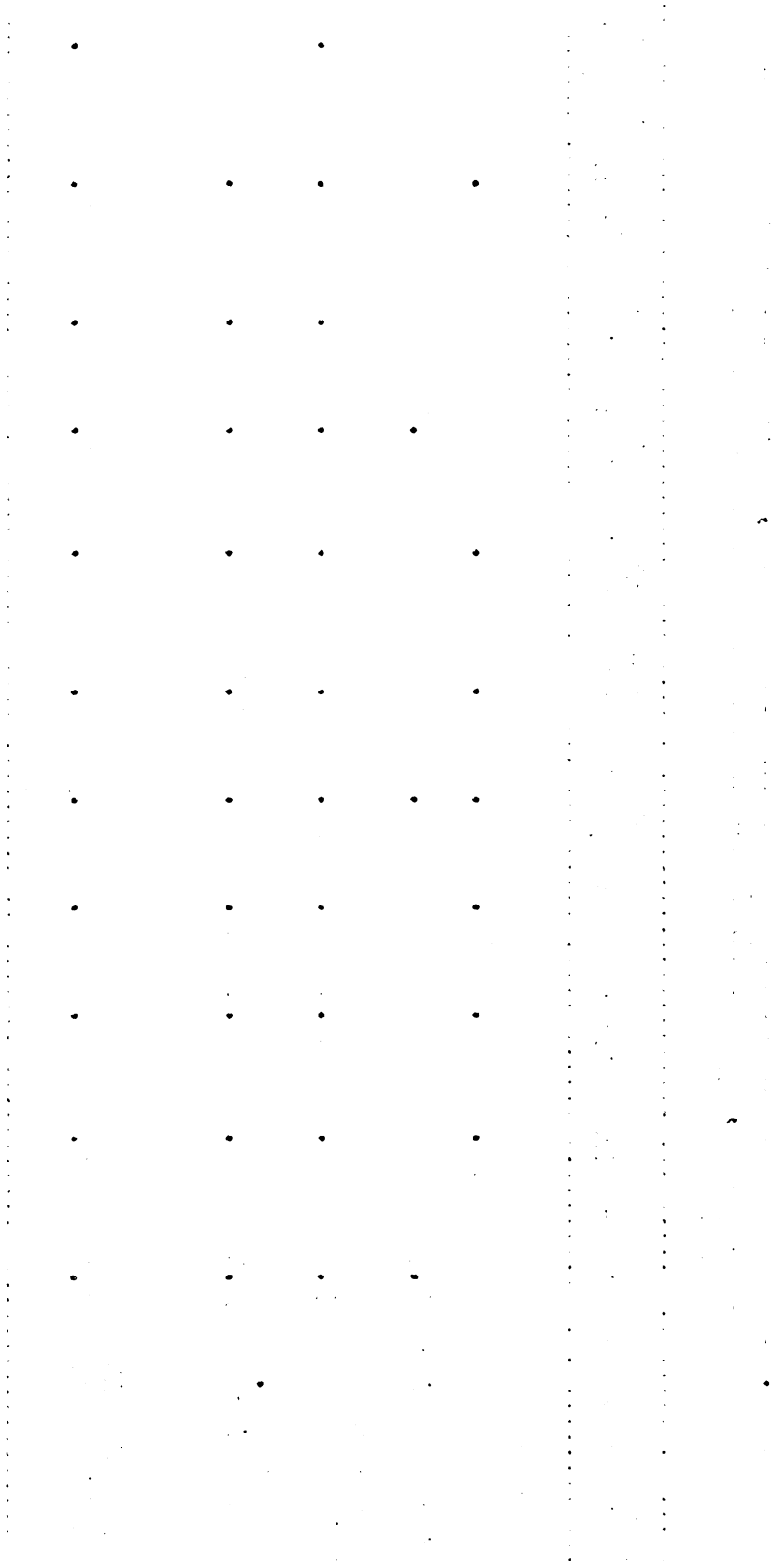
a. Detroit Public School System

The Detroit Public School System has 137 schools with lunchrooms. The entire system uses 1,250 pounds of fresh onions and 1,600 pounds (fresh equivalent) of chopped dehydrated onions per week during the 36 school weeks. Both the fresh onions and dehydrated onions are bought on a bid and contract basis with fresh onions purchases weekly and dehydrated onions purchases once per year. The following is a breakdown of the percentage of total onions used by the school lunchrooms in various types of foods: (1) salads or relishes, 12 percent; (2) soups or gravies, 28 percent; (3) stews, 10 percent; (4) fried onions with meat, 5 percent; (5) flavoring for pot roasts or other meat dishes, 20 percent; (6) meatloaf or stuffings, 20 percent; and (7) spaghetti sauce, 5 percent. (See Table X) This utilization breakdown was calculated by the head dietician of the school system from the master menus and recommended recipes used by all school lunchrooms. Both sweet and pungent onions are used by the school system and relative prices determine which type is used. Normally, Michigan (pungent) onions are used for 6 1/2 months of the school year or from September through February. Peeling and waste loss from fresh onions was estimated at twelve percent.

The dieticians and manu planners prefer fresh onions for use in salads, stews, and fried onions for texture reasons and prefer dehydrated onions for other uses because of convenience and uniform flavor of the dehydrated product. The school system has been using dehydrated onions since 1955 and all dehydrated onions are purchased in sealed number 10

TABLE X. PERCENTAGES OF TOTAL ONIONS USED IN 11 TYPES OF FOODS, BY CLASS OF MULTI-UNIT FEEDING ESTABLISHMENTS, AND FOR ALL MULTI-UNIT ESTABLISHMENTS INCLUDED IN THE DETROIT ONION UTILIZATION SURVEY

Class of Institutions	Sandwiches	Salads	Soups	Stews	Fried W/Meat	Meat-loaf	Meat Flavoring	Onion Rings	Creamed Onions	Spaghetti Sauce	Other Uses
Detroit School System		12.0	28.0	10.0	5.0	20.0	20.0			5.0	
Drive-In Chains	71.7				.4			27.9			
Restaurant Chains	3.2	.9	14.2	9.6	16.7	30.9	8.3	4.6	4.6	3.7	3.3
Drug or Dept. Store Chains	48.0	4.8	9.1	14.3	4.4	4.7	11.0	.3	.8	2.6	
All Multi-Unit Establishments	50.5	2.6	6.7	7.6	4.3	6.6	6.5	12.2	.9	1.7	.4



cans for storage reasons. French fried onion rings and canned onions are not used by the school system because they are more expensive than fresh or dehydrated onions. Frozen diced onions have not been tried by the school system but were scheduled for kitchen tests in the 1962-63 school year. A general shortage of frozen food storage capacity in the school lunchrooms will probably prevent the use of frozen diced onions for the immediate future. The opinions of the school system's menu planners and dieticians concerning the possible use of dehydrated and canned onions in various foods are summarized in Table XI.

b. Drive-in Chains

There are five drive-in chains located in Detroit which were included in this survey. To avoid identifying these chains by name it was decided to call them chains V,W,X,Y, and Z. The number of individual units, total number of employees, yearly volume of business, number of customers served per week, amount of fresh onions used and amount of processed onion products used in fresh onion equivalent per week for the five organizations is presented in Table XII. Four of the firms use dehydrated onions exclusively and firm Z used fresh onions only. Firms V, W, X, and Y use all their onions on hamburgers and firm Z uses 30 percent on hamburgers and 70 percent for french fried onion rings. (See Table X) Firm Z prefers to use fresh onions for making onion rings and utilizes the onion centers in diced form on hamburgers. Dehydrated onions are preferred over fresh onions by firms V, W, X, and Y because of convenience. Firm Z prefers to use fresh onions because of poor flavor and quality standardization of processed frozen french fried onion rings

TABLE XI. RESPONSES OF THE DETROIT PUBLIC SCHOOL DIETICIANS TO THE FOLLOWING QUESTIONS:

	Can dehydrated onions be used in the following 9 foods?			Could canned onions be used as a substitute for fresh onions in the following 9 foods?		
	Yes	No	Why Not	Yes	No	Why Not
a) On Sandwiches		X	Texture		X	Texture
b) Salads or Relishes		X	Texture		X	Texture
c) Soups or Gravies	X			X		
d) Stews	X			X		
e) Fried Onions for Steak or Liver	X			X		
f) Meatloaf or Stuffings	X			X		
g) Flavoring for Pot Roasts, Baked Meats or Other Meat Dishes	X			X		
h) Creamed Onions or Other Onion Dishes	X			X		
i) Spaghetti Sauce	X			X		

TABLE XII. NUMBER OF UNITS, YEARLY SALES, NUMBER OF EMPLOYEES, NUMBER OF CUSTOMERS SERVED PER WEEK, USE OF FRESH ONIONS AND USE OF DEHYDRATED ONIONS--5 DRIVE-IN CHAINS IN DETROIT, MICHIGAN

Firm	Units	Yearly Sales	No. of Employees	Customers Served/ Week	Fresh[a] Onions	Dehydrated[b] Onions
V	17	$ 750,000	70	85,000		1200
W	17	3,200,000	130	129,000		12,000
X	7	1,768,000	110	132,000		3760
Y	37	1,500,000	254	60,350		1480
Z	44	10,500,000	1212	389,880	12,500	--

[a]In pounds per week.

[b]In pounds of fresh onion equivalent per week: 1 pound of dehydrated onions equals 8 pounds of fresh onions

available on the market. Four of the respondents mentioned that frozen onion rings are of poor quality and too high priced.

All five of the drive-in chains have tried frozen diced onions on an experimental basis. Practically identical comments on frozen diced onions were obtained from the management of the five firms. The consensus of opinions was that flavor and quality are good in frozen diced onions but that the price is too high to compete with either fresh onions or dehydrated onions. Three respondents mentioned that a shortage of frozen food storage space would probably restrict the use of frozen chopped onions in their establishments.

c. Restaurant Chains

Two restaurant chains were interviewed in the Detroit institutional survey. These two organizations will be referred to here as firms A and B. Firm A has 6 restaurant units with a total employee force of 720, yearly total sales of $7,100,000 and serves a total of 139,000 meals per week. Weekly onion usage by Firm A at the time of this survey was 4,000 pounds of fresh onions and 115 pounds of fresh onion equivalent of canned onions. The onions are used as follows: (1) 1 percent on sandwiches; (2) 1 percent in salads or relishes; (3) 7 percent in soups or gravies; (4) 3 percent in stews; (5) 15 percent for fried onions with liver or steak; (6) 48 percent for meatloaf or stuffings; (7) 9 percent for french fried onion rings; (8) 4 percent for creamed onions or primary onion dishes; and (9) 2 percent for spaghetti sauce. (See Table X) Canned onions are used in stews and creamed onions but fresh onions are preferred because of lower price and better flavor. Firm A has tried dehydrated onions and frozen onion rings but does not use them because of high prices and poor flavor. Frozen diced onions have not been tried. The opinions of Firm A's dieticians and menu planners toward the use of processed onion products in various foods are presented in Table XIII.

Firm B has 19 restaurants and in-plant cafeterias with 460 employees, total annual sales of $12,000,000 and serves 144,000 meals per week. Firm B uses the following amounts of onions per week: (1) 1,850 pounds of fresh onions; (2) 2,400 pounds (fresh equivalent) of dehydrated onions; (3) 240 pounds (fresh equivalent) of frozen french fried onion

TABLE XIII. RESPONSES OF RESTAURANT CHAIN A'S DIETICIANS TO THE FOLLOWING QUESTIONS:

	Can dehydrated onions be used in the following foods?			Could canned onions be used as a substitute for fresh onions in the following foods?		
	Yes	No	Why Not	Yes	No	Why Not
a) On Sandwiches	X				X	Texture
b) Salads or Relishes	X				X	Texture
c) Soups or Gravies	X				X	Texture
d) Stews		X	Size	X		
e) Fried Onions for Steak or Liver	X				X	Texture
f) Meatloaf or Stuffings	X				X	Texture
g) Flavoring for Pot Roasts, Baked Meats or Other Meat Dishes	X			X		
h) Creamed Onions or Other Onion Dishes		X	Size	X		
i) Spaghetti Sauce	X			X		

rings; and (4) 600 pounds (fresh equivalent) of canned onions. Of the total amount of onions use, 5 percent are used on sandwiches, 1 percent for salads or relishes, 20 percent for soups or gravies, 15 percent for stews, 18 percent for fried onions with steak or liver, 17 percent for meatloaf or stuffing, 7 percent for flavoring meat dishes, 1 percent for onion rings, 5 percent for creamed onions, 5 percent for spaghetti sauce, and 6 percent for other miscellaneous uses. (See Table X) Firm B prefers to use fresh onions because of price, but uses canned onions, dehydrated onions, and frozen onion rings for certain dishes because of convenience.

d. Multi-Unit Feeding Units Associated With other Businesses

The last group of multi-unit feeding establishments covered by this survey maintain feeding operations as a supplement to their major businesses. These include a drug store chain which we will call Firm F, and two department store chains which will be designated as Firms G and H. The feeding operations of Firms F and H are primarily lunch counter operations serving short orders, snacks and beverages. Firm G has six restaurants serving full course meals plus two employee cafeterias. The number of individual units, number of employees, yearly sales volume, number of customers served per week, pounds of fresh onions used per week, pounds of dehydrated onions (fresh equivalent) used per week, and pounds of canned onions (fresh equivalent) used per week are given for the three firms in Table XIV. It should be noted that all the units of Firms F and G are not in the Detroit area but it was not possible to remove these units from the totals for the

firms. Firm F uses 90 percent of its onions on sandwiches, 2 percent in soups, 2 percent in stews, 3 percent in meatloaf or stuffings, and 3 percent for flavoring baked or roasted meats. (See Table X) Fresh onions are preferred by Firm F because of better flavor, but dehydrated onions are used for certain foods due to convenience in preparation and cooking. Firm F has not tried frozen diced onions.

The use of onions by Firm G is as follows: (1) sandwiches, 3 percent; (2) salads, 12 percent; (3) soups or gravies, 10 percent; (4) stews, 30 percent; (5) fried onions, 5 percent; (6) meatloaf or stuffings, 3 percent; (7) flavoring for roasts or baked meats, 15 percent; (8) onion rings, 5 percent; (9) creamed onions, 15 percent; and (10) spaghetti sauce, 2 percent. Firm G prefers processed onion

TABLE XIV. NUMBER OF UNITS, NUMBER OF EMPLOYEES, CUSTOMERS SERVED PER WEEK, FRESH ONIONS USED, DEHYDRATED ONIONS USED, AND CANNED ONIONS USED--FOR 3 DETROIT FEEDING ESTABLISHMENT CHAINS.

Firm	Units	Employees	Yearly Sales	Customers Served	Fresh Onion Used/ Week	Onion Used Dehydrated[a]	Canned Onion[b] Used
F	200	2,400	$ 9,318,400	560,000	2,000	1,600	--
G	8	460	5,840,000	132,000	300	840	450
H	48	1,120	46,800,000	2,000,000	1,000	24,800	700

[a]In pounds of fresh onion equivalent per week: one pound dehydrated equals eight pounds fresh.

[b]In pounds of fresh onion equivalent per week: one pound canned equals one pound fresh.

products for all uses because of convenience and reduced preparation. Frozen diced onions have been tried by Firm G but price was considered to be too high to make their use feasible.

Firm H uses onions in the following manner and proportions: (1) on sandwiches, 45 percent; (2) salads, 5 percent; (3) soups, 10 percent; (4) stews, 15 percent; (5) fried onions, 5 percent; (6) meatloaf or stuffings, 5 percent; (7) flavoring for roasts or baked meats, 12 percent; and (8) spaghetti sauce, 3 percent. Processed onion products are preferred by Firm H because of convenience and uniformity of flavor. Frozen diced onions and frozen onion rings have not been tried by this organization.

The data shown in Table X indicate that there are wide differences in the amount of onions used by different types of multi-unit institutions, and also marked differences in the ways onions are used. Tables XII and XIV show that the number of customers served and yearly volume of sales by multi-unit institutions are very large. Each of the multi-unit firms accounts for a significant part of the Detroit institutional food volume. The exclusion of any one of the multi-unit firms from the Detroit survey would have had significant effects on the data collected in the survey. For this reason it would seem necessary to include all multi-unit firms within a test market in a survey of this type if the results obtained are to be meaningful and reliable.

3. The Total Detroit Institutional Market

The Detroit onion utilization survey covered 376 single-unit firms (out of a total of 1800 in Detroit) and all 540 units of the eleven

multi-unit firms operating in Detroit. From the data gathered in this survey, estimates were made of the characteristics of the total Detroit institutional market. These estimated characteristics of the Detroit institutional market are given in Table XV. In 1962 all Detroit institutions employed approximately 35,942 people, served 467,583,000 meals per year and had annual sales volume of $324,461,000. Total sales volume of Detroit institutions was made up of sales of $223,795,000 by single-unit firms and $100,666,000 by multi-unit firms.

a. Total Onion Usage

All Detroit institutions utilized an estimated 11,531,200 pounds of onions (fresh equivalent) per year in 1961. Of this amount, 67.2 percent were purchased in fresh form, 29.9 percent were in dehydrated form, 2.5 percent were canned, and .4 percent were in frozen form. This information is presented in detail in Table XVI. There were wide variations in product form used between the multi-unit and single-unit firms and in the various types of institutions.

Table XVII shows the quantities of onions used in various types of foods by types of institutions and by single-unit and multi-unit firms. Of the total onions utilized by Detroit institutions, 33.3 percent were used on sandwiches, 3.8 percent in salads, 15.2 percent in soups, 8.7 percent in stews, 7.8 percent fried with meat, 5.9 percent in meatloaf, 6.6 percent as flavoring for baked meats, 9.7 percent as fried onion rings, 2.8 percent in spaghetti sauce, and 2.1 percent for all other uses. The wide variations in usage by different types of institutions

TABLE XV. CHARACTERISTICS OF THE DETROIT INSTITUTIONAL MARKET, BY SINGLE-UNIT AND MULTI-UNIT FIRMS, BY NUMBERS OF UNITS, BY TYPE OF UNIT, WITH YEARLY SALES, NUMBER OF EMPLOYEES, AND NUMBERS OF MEALS SERVED, DETROIT, MICHIGAN, 1962

Class of Institution		No. of Units	Yearly Sales ($1,000)	No. of Employees	Meals Served Annually (1,000's)
Single-Unit Firms*					
Drive-Ins		129	21,553	1,807	26,046
Cafeterias		100	11,945	903	20,798
Hospitals & Schools		91	18,709	4,722	36,256
Low Class Restaurants		526	22,084	2,629	42,461
High Class Restaurants		340	72,627	10,860	53,330
Private Clubs		97	37,953	3,155	18,135
Coffee Shops		268	18,202	1,874	30,315
Mfg. Plant Cafeterias		96	10,134	956	24,038
Others		153	10,588	1,200	14,794
Sub-Total		1,000	223,795	28,106	266,173
Multi-Unit Firms	Firms				
Detroit Sch. Sys	1	137	1,990	900	5,300
Drive-In Chains	5	122	17,718	1,776	41,410
Restaurant Chains	2	25	19,000	1,180	14,716
Drug or Dept. Store Chains	3	256	61,958	3,980	139,984
Sub-Total	11	540	100,666	7,836	201,410
Totals		2,340	324,461	35,942	467,583

*Estimate of 1,800 firms bases on a sub-sample of 376 firms.

TABLE XVI. TOTAL DETROIT INSTITUTIONAL ONION USAGE PER YEAR, BY PRODUCT FORM, BY TYPE OF INSTITUTION, FOR SINGLE-UNIT, MULTI-UNIT AND TOTAL INSTITUTIONAL USE, DETROIT, MICHIGAN, 1962

	Fresh	Dehydrated	Canned	Frozen	Total
	(1,000# fresh equivalents)				
Single Unit Firms*					
Drive-Ins	724.8	68.6	--	11.9	805.3
Cafeterias	433.2	36.8	51.4	0.5	521.9
Hospitals & Private Schools	429.7	113.4	4.0	0.7	547.8
Low Class Restaurants	1,039.0	51.7	17.4	12.9	1,120.9
High Class Restaurants	2,064.8	149.9	88.5	8.7	2,311.8
Private Clubs	527.0	201.3	18.5	--	745.7
Coffee Shops	570.7	157.6	2.6	7.4	738.0
Mfg. Plant Feeding Services	397.7	75.3	6.4	2.8	482.2
Other	387.5	38.5	--	--	426.0
Total	6,574.3	893.0	187.3	44.9	7,699.6
Total in %	85.4%	11.6%	2.4%	0.6%	100.0%
Multi-Unit Firms					
Detroit School System	45.0	57.6	--	--	102.6
Drive-In Chains	650.0	958.8	--	--	1,608.8
Restaurant Chains	304.2	124.8	37.1	6.2	472.3
Drug or Dept. Store Chains	171.6	1,416.5	59.8	--	1,647.9
Sub-Total	1,170.8	2,557.7	96.9	6.2	3,831.6
Sub-Total in %	30.6%	66.7%	2.5%	0.2%	100.0%
Totals	7,745.1	3,450.7	284.2	51.5	11,531.2
Totals in %	67.2%	29.9%	2.5%	0.4%	100.0%

*Estimate of 1,800 firms based on a sub-sample of 376 firms.

TABLE XVII. TOTAL DETROIT INSTITUTIONAL ONION USAGE PER YEAR BY TYPE OF FOOD, BY TYPE OF INSTITUTION, FOR SINGLE-UNIT AND MULTI-UNIT FIRMS, AND FOR ALL FIRMS, DETROIT, MICHIGAN, 1962. (1,000# fresh equivalents)

	Sandwiches	Salads	Soups	Stews	Fried with Meat	Meatloaf
Single-Unit Firms*						
Drive-Ins	384.9	8.1	17.7	1.6	13.7	1.6
Cafeterias	49.1	24.5	100.2	88.7	102.8	44.4
Hospitals & Schools	46.0	44.9	151.7	49.3	28.5	57.5
Low Class Restaurants	330.7	42.6	150.2	100.9	196.2	67.3
High Class Restaurants	277.7	141.1	462.8	289.3	244.5	131.9
Private Clubs	19.4	13.4	387.9	70.8	56.7	23.9
Coffee Shops	365.7	32.5	88.5	51.6	45.7	48.0
Mfg. Plant Feeding Service	252.2	7.7	98.9	33.8	30.4	24.1
Other	165.2	25.48	47.0	29.7	38.1	32.2
Sub-Total	1,890.9	340.2	1,504.8	715.7	736.6	430.8
Multi-Unit Firms						
Detroit School System	--	12.3	28.7	10.3	5.1	20.5
Drive-In Chains	1,153.0	--	--	--	7.3	--
Drug or Dept. Store Chains	791.0	78.8	149.8	235.2	73.1	77.0
Restaurant Chains	15.4	4.8	67.9	46.1	79.8	147.7
Sub-Total	1,959.5	95.9	246.5	291.6	165.3	245.2
Total	3,850.4	436.1	1,751.3	1,007.3	901.9	676.0
Percent of Total	33.3%	3.8%	15.2%	8.7%	7.8%	5.9%

Estimate of 1,800 firms based on a sub-sample of 376 firms.

TABLE XVII. (Cont.)

	Flavoring for Baked Meats	Onion Rings	Creamed Onions	Spaghetti Sauce	Other Uses	Total
Single-Unit Firms						
Drive-Ins	8.1	363.2	--	3.2	3.2	805.3
Cafeterias	49.6	4.1	26.1	28.7	3.7	522.0
Hospitals & Schools	83.8	24.7	27.4	18.6	18.6	551.1
Low Class Restaurants	74.0	39.2	11.2	44.8	63.9	1,121.0
High Class Restaurants	178.2	74.0	337.8	97.2	99.5	2,313.8
Private Clubs	37.3	85.1	29.8	17.2	4.5	745.8
Coffee Shops	45.0	28.0	--	17.7	14.8	737.5
Mfg. Plant Feeding Service	9.7	9.6	4.8	9.6	1.4	482.2
Other	30.9	16.9	6.4	14.8	17.8	424.3
Sub-Total	516.5	644.9	443.5	251.9	227.4	7,703.0
Multi-Unit Firms						
Detroit School System	20.5	--	--	5.1	--	102.6
Drive-In Chains	--	448.5	--	--	--	1,608.8
Restaurant Chains	39.9	21.9	21.8	17.5	15.9	478.8
Drug or Dept. Store Chains	183.4	4.2	12.4	43.0	--	1,647.9
Sub-Total	243.8	474.6	34.2	65.6	15.9	3,838.1
Total	760.3	1,119.5	477.7	317.5	243.3	11,531.1
Percent of Total	6.6%	9.7%	4.1%	2.8%	2.1%	100.0%

were primarily due to differences in types of food served.

Chefs of Detroit institutions were asked to state their opinions about the potential or possible use of dehydrated onion products, frozen diced onions, and canned onions in various dishes and foods. The opinions of each individual chef were weighted by the total amount of onions used and the relativeamounts of onions used in various foods by the institution for which the chef worked. By this process a weighted estimate was obtained of the potential market for dehydrated onions, frozen diced onions and canned onions in the total Detroit institutional market. (See Tables XVIII and XIX) Since any of the three forms of onions can be adapted for several uses, the potential market for the three products in Detroit institutions are as follows: (1) dehydrated onions, 69 percent of total onion usage; (2) frozen diced onions, 65.8 percent of total onion usage; and (3) canned onions, 35.6 percent of total onion usage. Since uses of these three products overlap, the maximum potential market for all three products combined would be approximately 70 percent of total onion usage.

b. Product Forms Used

At the time of the Detroit survey, total institutional onion usage was made up of 67.2 percent fresh onions, 29.9 percent dehydrated onion products, 2.5 percent canned onions, and .4 percent frozen onion products. It is expected that fresh onions in institutional onion usage will be replaced to a considerable degree over time by processed onion products. The degree to which processed onion products replace fresh onions will be largely determined by product quality, price and con-

TABLE XVIII. POSSIBLE ANNUAL USE OF DEHYDRATED ONIONS IN TEN TYPES OF FOOD, BY TYPE OF INSTITUTION, FOR SINGLE-UNIT FIRMS, MULTI-UNIT FIRMS, AND FOR ALL INSTITUTIONS, DETROIT, 1962. (1,000 hundredweight)

	Sandwiches	Salads	Soups	Stews	Fried with Meat	Meatloaf
Single-Unit Firms*						
Drive-Ins	223.7	9.4	19.4	--	14.9	1.5
Cafeterias	--	24.0	47.7	114.1	82.0	44.7
Hospitals & Schools	40.5	65.9	141.2	48.0	19.4	53.4
Low Class Restaurants	108.9	33.6	101.4	122.3	69.3	26.8
High Class Restaurants	211.8	19.6	287.3	177.4	74.6	84.5
Private Clubs	8.0	27.8	285.3	115.3	85.8	42.3
Coffee Shops	249.6	3.2	30.3	18.1	27.3	22.4
Mfg. Plant Feeding Service	40.8	8.0	313.2	30.8	79.5	27.8
Other	197.1	0.5	11.4	8.0	8.9	10.9
Sub-Total	1,080.4	192.0	1,237.2	633.8	461.7	314.3
Multi-Unit Firms						
Detroit School System	--	--	41.5	14.8	7.4	29.6
Drive-In Chains	1,146.2	--	--	--	14.2	--
Restaurant Chains	2.1	4.8	67.9	39.7	32.1	147.7
Drug or Dept. Store Chains	662.6	68.9	149.8	235.3	73.1	77.0
Sub-Total	1,810.9	73.7	259.2	289.8	126.8	254.3
Totals	2,891.3	265.7	1,496.4	923.6	588.5	568.6

*Estimate of 1,800 firms based on a sub-sample of 376 firms.

TABLE XVIII. (Cont.)

	Flavoring for Baked Meats	Creamed Onions	Spaghetti Sauce	Other Uses	Totals
Single-Unit Firms					
Drive-Ins	8.0	--	6.0	2.5	285.4
Cafeterias	48.5	67.1	6.7	3.0	437.8
Hospitals & Schools	95.2	--	21.9	9.4	494.9
Low Class Restaurants	27.6	3.0	20.9	16.4	530.2
High Class Restaurants	108.1	92.0	92.0	10.7	1,158.0
Private Clubs	44.7	26.1	9.9	1.7	646.7
Coffee Shops	17.6	--	--	9.2	377.7
Mfg. Plant Feeding Service	52.7	2.0	29.8	14.9	599.5
Other	12.4	--	2.0	18.9	270.1
Sub-Total	414.8	190.2	189.2	86.7	4,800.3
Multi-Unit Firms					
Detroit School System	29.7	--	7.4	--	130.4
Drive-In Chains	--	--	--	--	1,160.4
Restaurant Chains	39.9	13.3	17.5	15.9	380.9
Drug or Dept. Store Chains	183.4	--	43.0	--	1,493.1
Sub- Total	253.0	13.3	67.9	15.9	3,164.8
Totals	667.8	203.5	257.1	102.6	7,965.1

TABLE XIX. POSSIBLE ANNUAL USE OF FROZEN DICED ONIONS IN TEN TYPES OF FOODS, BY TYPE OF INSTITUTION, FOR SINGLE-UNIT, MULTI-UNIT FIRMS, AND FOR ALL INSTITUTIONS, DETROIT, 1962. (1,000 hundredweight)

	Sandwiches	Salads	Soups	Stews	Fried with Meat	Meatloaf
Single-Unit Firms*						
Drive-Ins	214.8	9.1	18.6	--	14.3	1.4
Cafeterias	--	22.9	45.8	109.5	78.7	43.0
Hospitals & Schools	38.9	63.2	135.5	46.1	18.6	51.3
Low Class Restaurants	104.5	32.2	97.3	117.4	66.6	25.8
High Class Restaurants	203.3	18.9	275.8	170.6	71.6	81.1
Private Clubs	7.6	26.7	273.9	110.5	82.3	40.6
Coffee Shops	239.6	3.1	29.1	17.4	26.2	21.5
Mfg. Plant Cafeterias	39.1	7.6	300.7	29.6	76.4	26.7
Others	189.2	0.5	11.0	7.6	8.6	10.5
Sub-Total	1,037.0	184.2	1,187.7	608.7	443.3	301.9
Multi-Unit Firms						
Detroit School System	--	--	39.8	14.2	7.1	28.5
Drive-In Chains	1,100.3	--	--	--	13.6	--
Restaurant Chains	2.0	4.6	65.2	38.1	30.8	141.8
Drug or Dept. Store Chains	579.7	66.1	143.8	225.8	70.1	73.9
Sub-Total	1,682.0	70.7	248.8	278.1	121.6	244.2
Totals	2,719.0	254.9	1,436.5	886.8	564.9	546.1

*Estimate of 1,800 firms based on a sub-sample of 376 firms.

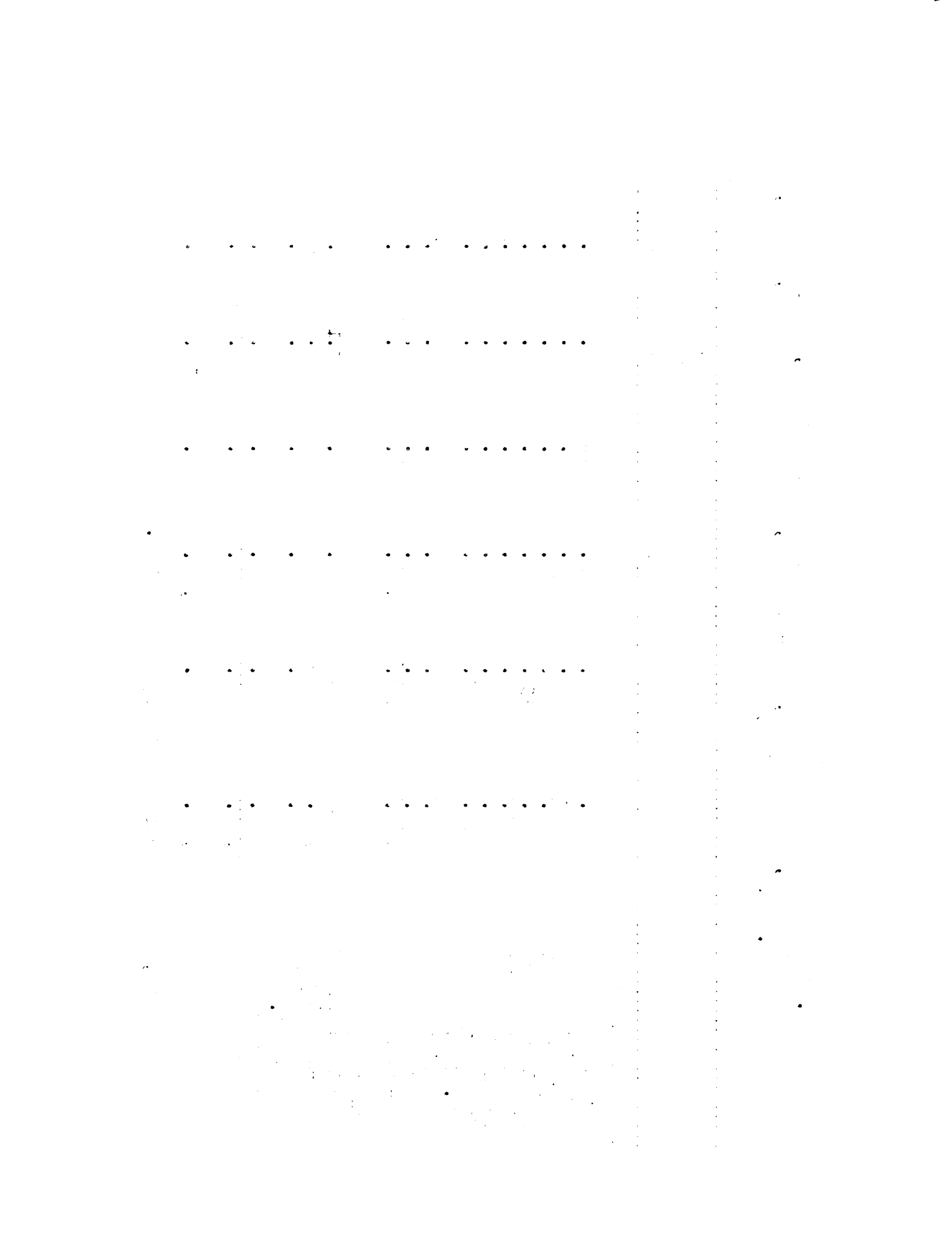


TABLE XIX. (Cont.)

	Flavoring for Baked Meats	Creamed Onions	Spaghetti Sauce	Other Uses	Totals
Single-Unit Firms					
Drive-ins	7.6	--	5.7	2.7	274.2
Cafeterias	46.5	64.4	6.4	2.9	420.1
Hospitals & Schools	91.4	--	21.0	9.3	475.3
Low Class Restaurants	26.5	2.9	20.0	15.8	509.0
High Class Restaurants	103.8	88.3	88.3	10.3	1,112.0
Private Clubs	43.0	25.1	9.5	1.9	621.1
Coffee Shops	16.9	--	--	8.8	362.6
Mfg. Plant Cafeterias	50.6	1.9	28.6	14.4	575.6
Others	11.9	--	1.9	18.4	259.6
Sub-Total	398.2	182.6	181.4	84.5	4,609.5
Multi-Unit Firms					
Detroit School System	28.5	--	7.1	--	125.2
Drive-In Chains	--	--	--	--	1,113.0
Restaurant Chains	38.3	12.7	16.8	15.2	365.5
Drug or Dept. Store Chains	176.1	--	41.3	--	1,376.8
Sub-Total	242.9	12.7	65.2	15.2	2,981.4
Totals	641.1	195.3	246.6	99.7	7,590.9

venience of various onion products. At the time the survey was conducted the cost of one pound of onions ready to use from the various onion product forms was as follows: (1) fresh onions, 15 cents (including peeling and waste losses and labor costs); (2) dehydrated onions, 13 to 18 cents; (3) frozen diced onions, 27 to 30 cents; and (4) canned onions, 27 cents. The cost of fresh onions can be expected to vary considerably depending upon the time of year and size of the onion crop. On the basis of these cost relationships along it appears that dehydrated onion products have the best potential to replace fresh onions in the institutional market. However, other factors such as product quality differences, the possibility of technological improvements, and cost reduction of frozen diced onions may alter these competitive relationships between fresh onions and the various onion products over time.

In 1962, Detroit institutions used an estimated total of 1,119,500 pounds (fresh equivalent) of onions in the form of french fried onion rings. Of this amount only 51,100 pounds or 4.5 percent were made up of processed frozen french fried onion rings. Chefs were asked to state their preferences for fresh onion rings or frozen onion rings and to give the reasons for their preferences. Eighty percent of the chefs responding to this question preferred fresh onion rings. Reasons stated by chefs for preferring fresh rings were: (1) poor quality or flavor of frozen rings, (2) cost of frozen rings, and (3) other miscellaneous reasons. If technological improvements can be made which will allow the factory production of high quality frozen onion rings

at a price competitive with the cost of onion rings made by institutions from fresh onions, there would be a potential market for this product of 1,068,300 additional pounds in the Detroit institutional market.

4. Expansion of Detroit Data to National Data

It was stated earlier that results from an institutional sales test could be expanded into national data by one of three means: (a) numbers of establishments, (b) numbers of employees, or (c) total annual dollar sales. In this section, the Detroit data on current onion usage and potentials for onion products will be projected into national figures in order to evaluate the predictive model previously proposed in Chapter III. Table XX compares the Detroit institutional market with the national total public eating place business in terms of numbers of establishments, annual dollar sales and numbers of employees of both single-unit and multi-unit institutions.

On the basis of expansion of the Detroit survey data, estimates of total institutional use of onions, possible use of dehydrated onions, current dehydrated onion usage, and market potentials for dehydrated onions during 1961 are given in Table XXI. These estimates were obtained by projecting information from the Detroit survey into national data by means of the relationship of Detroit institutions to U.S. public feeding placesin terms of three size measures; number of establishments, number of employees, and annual volume of sales. For example, the figure for national total onion usage of 386,637,800 pounds (fresh equivalent) was derived by using the predictive model presented previous-

ly on page 41. The calculations are as follows:

National Onion Usage = (Detroit multi-unit usage)

$$\frac{(\$\text{sales of multi-unit firms in total U.S.})}{(\$\text{sales of multi-unit firms in Detroit})}$$

plus (Detroit single-unit usage)

$$\frac{(\$\text{sales of single-unit firms in total U.S.})}{(\$\text{sales of single-unit firms in Detroit})}$$

National Onion Usage = $(3,831,600)\left(\frac{1,902,146,000}{100,666,000}\right)$ plus

$$(7,699,600)\left(\frac{9,135,488,000}{223,795,000}\right)$$

National Onion Usage = 386,637,800 pounds

Table XXII presents a series of estimates of U.S. total possible use of frozen chopped onions and possible market potentials for frozen chopped onions. These estimates are based on the stated acceptance of frozen diced onions for various food uses by Detroit chefs. The possible market potential figures for frozen chopped onions are derived by subtracting the portion of total U.S. onion usage already captured by dehydrated onions from the possible use figures. (Dehydrated onions have already captured approximately 35 percent of the amount of total onion usage for which a diced product is suitable). Table XXIII presents estimates of the amount of french fried onion rings used, factory processed onion rings used, and additional potentials for factory processed french fried onion rings for the total U.S. public eating place business. These estimates were derived by projecting the current use of french fried onion rings in Detroit institutions into national institutional use figures on the basis of the relationship between sales of Detroit

TABLE XX. SIZE OF THE DETROIT SAMPLE IN RELATION TO SIZE OF THE U.S. PUBLIC EATING PLACE BUSINESS

Size Characteristics	Detroit Sample	U.S. Total**	Detroit Sample as Percent of U.S. Total (Percent)
Number of Single-Units*	1,800	211,904	.85%
Number of Multi-Units	540	17,911	3.01%
Total Number of Units	2,340	229,815	1.02%
Yearly Sales Single-Units*	$223,795,000	$ 9,135,498,000	2.45%
Yearly Sales Multi-Units	100,666,000	1,902,146,000	5.29%
Total Sales	$324,461,000	$11,037,644,000	2.94%
Number of Employees			
Single-Units*	28,106	1,060,629	2.65%
Multi-Units	7,836	251,958	3.11%
Total Employees	35,942	1,312,587	2.71%

*Estimate of 1,800 firms from a sub-sample of 376 firms.

**Bases on 1958 Census of Business.

TABLE XXII. FROZEN CHOPPED ONIONS: MARKET POTENTIALS BASED ON STATED ACCEPTANCE OF THE PRODUCT MINUS CURRENT DEHYDRATED ONION USE. EXPANSION OF SAMPLE RESULTS BY THREE SIZE CLASSIFICATIONS OF THE SAMPLE, NUMBER OF FIRMS, NUMBER OF EMPLOYEES AND DOLLAR SALES, DETROIT, MICHIGAN, 1963. (In 1,000 pound fresh equivalent)

Market Characteristics	Detroit Sample	Expansion of Sample to U.S. Total** Based on: No. of Firms	No. of Employees	Dollar Sales
Total Onion Usage				
Single-Units	7,699.6*	905,780.5	290,582.9	314,220.6
Multi-Units	3,831.6	127,285.8	123,185.9	72,417.2
Totals	11,531.2	1,033,066.3	413,768.8	386,637.8
Possible Use of Frozen Chopped				
Single-Units	4,609.5*	542,261.6	173,962.5	188,113.7
Multi-Units	2,981.4	99,042.1	95,852.0	56,348.4
Totals	7,590.9	641,303.7	269,814.5	244,462.1
Current Dehydrated Usage				
Single-Units	893.0*	105,052.5	33,701.8	36,443.3
Multi-Units	2,557.7	84,966.8	82,230.1	48,340.5
Totals	3,450.7	190,019.3	115,931.9	84,783.8
Possible Market Potentials for Frozen Chopped Onions				
Single-Units	3,716.5*	437,209.1	140,260.7	151,670.4
Multi-Units	423.7	14,075.3	13,622.0	8,007.9
Totals	4,140.2	451,284.4	153,882.7	159,678.3
Total Actual Sales Frozen Chopped Onions	24.8	2,434.2	910.6	844.5

*Estimate of 1,800 firms based on a sub-sample of 376 firms.
**U.S. Totals Based on Data from 1958 Census of Retail Trade.

TABLE XXIII. POTENTIALS FOR FACTORY PROCESSED FRENCH FRIED ONION RINGS. DETROIT SAMPLE EXPANDED BASED ON NUMBERS OF ESTABLISHMENTS, NUMBERS OF EMPLOYEES AND DOLLAR VALUE OF SALES, DETROIT, MICHIGAN, 1963. (In 1,000 pound fresh equivalent)

Market Characteristics	Detroit Sample	Expansion of Sample to U.S. Total** Based on: No. of Firms	No. of Employees	Dollar Sales
Total Use French Fried Onion Rings				
Single-Units	644.8*	75,854.3	24,334.7	26,314.2
Multi-Units	474.6	11,020.2	15,258.4	8,970/0
Totals	1,119.4	86,874.5	39,593.1	35,284.2
Factory Processed French Fried Onion Rings				
Single-Units	44.9*	5,282.1	1,694.5	1,832.4
Multi-Units	6.2	144.0	199.3	117.2
Totals	51.1	5,426.1	1,893.8	1,949.6
Additional Potentials for Factory Processed French Fried Onion Rings				
Single-Units	599.9*	70,572.2	22,640.2	24,477.8
Multi-Units	468.4	10,876.2	15,059.1	8,852.8
Totals	1,068.3	81,448.4	37,699.3	33,334.6

*Estimate of 1,800 firms based on a sub-sample of 376 firms.
**Expansion based on 1958 Census of Retail Trade.

institutions and sales of all U.S. public eating places.

5. Evaluation of the Predictive Model

The predictive model developed in this study for determining potential national institutional sales of a new food product from sales of the product in a test market is based on the relationship between sales of single and multi-unit institutions in a test market and sales of all U.S. public eating places. In order to evaluate the accuracy of this model, it was sued to estimate the total U.S. institutional usage of dehydrated onions on the basis of data collected from Detroit public eating places. The estimate of total U.S. institutional usage of dehydrated onions derived through the use of this model compares reasonably well to other estimates of national institutional usage of dehydrated onions. Sources in the onion dehydration industry indicate that about 2.5 million hundredweight of onions were dehydrated in 1961 and that at least one-third of the dehydrated onions produced were sold to institutions. This would indicate that institutional usage of dehydrated onions in 1961 was about 83,300,000 pounds (fresh equivalent). The estimate of U.S. Institutional dehydrated onion usage derived from the predictive model was 84,700,000 pounds (fresh equivalent). Thus, the predictive model yielded an estimate of national usage which was less than five percent different from the best estimate available from other sources. Since projections beyond known parameters are always subject to error, it would appear that this predictive model is sufficiently accurate for the purpose for which it was designed. The predictive model could probably be made more accurate by taking into

account the differences in acceptance of new processed food products by various types of institutions. This would require breaking down sales data from a test market into sales to high class restaurants, schools, manufacturing plant cafeterias, etc. in addition to the breakdown by type of ownership. However, at the present time there are no national statistics available on sales of institutions by size or type which could be used to make national projections.

It was mentioned earlier (c.f. page 41) that there are three measures of size of the "population" of institutions in a test market. The predictive model presented in this study is based on the relationship between annual volume of sales of total U.S. public eating places. "Dollar sales volume" was selected as a base for the predictive model because this yielded the most reasonable predictions of national onion usage. A predictive model based on "Numbers of Firms" greatly overestimates the national institutional usage of onions and onion products when national figures are projected from test market survey data. However, it seems that "Annual Volume of Sales" is the most accurate measure of the size of the institutional food market on which to base a predictive model for institutional sales testing.

FOOTNOTES - CHAPTER IV

[1]Statistics given in the Survey of Current Business, Supplement for 1962 indicate that food and beverag sales by institutions within the city of Detroit make up .0027 percent of total U.S. sales of foods and beverages in eating and drinking places.

[2]The farm, wholesale and retail prices of fresh onions reached nearly a historic high point during the time this test was being conducted.

[3]A more detailed treatment of the amount of onions used in various forms will be given in a later section of this chapter.

[4]Processors of frozen french fried onion rings indicated that the absorption of frying oil and batter by the onion rings makes up for peeling and waste losses in the manufacturing process.

CHAPTER V

SUMMARY AND CONCLUSIONS

A. Statement of the Problem

There has been little development of techniques for testing the market acceptance of new food products designed for sale to the institutional food market. Though this market accounts for 25 percent of U.S. expenditures for food and beverages, it has been largely ignored in work done on pre-market testing of new food products. Methods for testing consumer preferences and acceptance of new retail or consumer food products through the use of laboratory or mass panels and retail sales tests have been fairly well refined. Some institutional market acceptance testing has been done by the use of the demonstration-interview technique, but products are not offered for sale to institutions in the demonstration-interview technique. Prior to this study there was no published methodology for conducting institutional acceptance tests on new food products through the use of an institutional sales test.

B. Hypothesis and Assumptions

The hypothesis of this study was that an institutional sales test methodology could be developed which would serve as an accurate indicator of the institutional acceptance of new food products. Assumptions on which the test methodology was developed were as follows: (1) institutions in a test market are representative of all U.S. institutions in regard to the acceptance of new processed food products;

(2) there will be no change in institutional sales of competing products during a sales test period; (3) a measure of the size of the "institutional market" in a test market can be developed; (4) quality, form, technology and prices of competing products will not change during an institutional sales test; and (5) the variables of price, quality and convenience of the tested product; usage patterns of competing products; size and type of institutions in the test market; and certain unknown variables will affect the acceptance of the tested product. All unknown variables were assumed to have a random effect upon the acceptance of the tested product.

C. Institutional Sales Test

In the winter of 1961-62 an institutional sales test was conducted in Detroit, Michigan to test the acceptance of a new processed onion product, frozen diced onions, under conditions identical to those in which new food products are commercially introduced to the institutional market. The test was conducted by having 1,000 samples of the tested product distributed to a sample of Detroit institutions by the salesmen of the nine principal frozen food distributors in Detroit. The reactions of the institutional buyers and chefs to the product were recorded by the distributor salesmen and an attempt was made to sell the product to institutions. Weekly records were kept of the initial and repeat sales to each institution for a period of twelve weeks and weekly records of each of the nine distributor's sales were kept for a period of nine months.

D. Onion Utilization Survey

The second part of the institutional sales test was completed in the summer of 1962 by a survey of institutions in Detroit to determine the amount of market penetration of the tested product and to gather data on purchase patterns and utilization of onions and onion products. A random sample of 400 of the 1,800 single-unit feeding establishments in Detroit were surveyed by means of personal interviews with chefs and buyers of institutions. In addition all multi-unit feeding firms in Detroit were surveyed; there were eleven such multi-unit firms with a total of 540 individual feeding establishments. From the data gathered in this survey it is estimated that in 1962 all Detroit public eating and drinking places employed about 35,942 people, served 467,583,000 meals per year and had annual sales of $324,461,000.

The questionnaire used for the interviews contained the seven following principal sections: (1) general information, (2) amount of onion usage by forms and type of onions used in various foods, (3) specific questions dealing with the use of dehydrated onion products, (4) specific questions on the use of frozen diced onions, (5) specific questions on the use of french fried onion rings, (6) specific questions on the use of canned onions, and (7) questions dealing with the potential use of all forms of onion products in various types of foods.

E. Results of Sales Test

Sales of frozen diced onions under the institutional sales test were thirty-four cases of 24 pounds each in November, sixty-seven cases

in December and sixty-nine cases in January. If the January sales figure of sixty-nine cases were projected into a national potential figure, we could expect national annual sales of frozen diced onions to institutions to be 28,152 cases of 24 pounds each or 675,648 pounds. This projection is made by means of the predictive model equation presented in Chapter III.

During the sales test the price of frozen diced onions was eighteen cents per pound compared to a price of seven to eight cents per pound for fresh onions. In the early part of February the price of frozen diced onions was increased to 25-27 cents per pound as compared with a price of 8-10 cents per pound for fresh onions and the sales of frozen diced onions dropped to approximately ten cases per month during the months of February, March, April, May and June. Thirty-seven Detroit institutions made a trial purchase of frozen diced onions during the twelve week test period. The reasons for lack of better acceptance of the tested product, as given by chefs, are as follows in order of importance: (1) habitual use of other forms of onions, (2) price, (3) poor quality or flavor, and (4) lack of freezer space. The primary deterrants to sales were resistance to change on the part of chefs and the price relationship between frozen diced onions and fresh onions. During the sales test a pound of ready-to use diced onions could be obtained from fresh onions for approximately 13-14 cents as compared to 18 cents for one pound of frozen diced onions.

F. Potentials for Processed Onion Products

There appears to be a good prospect for expanding the institutional market for processed onion products. The possible total national institutional market for dehydrated onions based on buyers opinions of their acceptability for various uses is estimated to be 255,714,900 pounds (fresh equivalent). Total national current usage of dehydrated onions by institutions is estimated to be 84,783,800 pounds annually (fresh equivalent) thus leaving a possible potential market of 170,931,100 pounds (fresh equivalent) annually to the public eating place market. On a price per delivered pound basis, dehydrated onions have a clear advantage over other forms of processed onions.

The possible annual national market potentials for frozen diced onions are only slightly less than for dehydrated. Expansion of the Detroit survey data into national figures by means of the predictive model previously presented indicate a potential market for frozen diced onions of 244,462,100 pounds annually at the public eating place level. (See Table XXII) Since dehydrated onions had already captured an estimated 35 percent of this total, a potential national institutional market of 159,678,300 pounds (fresh equivalent) remained for frozen diced onions. The market potentials for dehydrated onions and frozen diced overlap almost completely.

Canned whole onions are primarily used by institutions for certain specialized dishes such as creamed onions and stews. The market for this product is limited by the number of institutions which serve these types of dishes and the high price of this product form in relation to

fresh onions.

Almost 10 percent of total onions used by institutions in Detroit were used in the form of french fried onion rings. Expanding these figures to the national public eating place market indicated a national use of 35,284,200 pounds (fresh equivalent) of onions in french fried form. Since only about 4 percent of french fried onion rings were purchased by institutions in prepared form, there would be a potential annual national institutional market for an additional 33,334,600 pounds (fresh equivalent) of prepared onion rings. If product quality of frozen french fried onion rings can be improved, this product probably has the best institutional market potential of any processed onion product.

G. Relevance of Assumptions Underlying the Study

When this study was begun, a group of assumptions were made concerning conditions under which the study would be conducted. At this point it would seem appropriate to examine the relevance of certain of those assumptions. A crucial assumption to the usefulness of the institutional sales test as a method of predicting acceptance of new products is that the results of a sales test can be projected into national figures on the basis of annual sales of institutions in the test market. It is impossible to check in detail what the national market potential for frozen diced onions might be because of the fact that no processor has attempted to sell the product on a national basis. Thus we cannot be certain of the accuracy of the projected national sales of frozen diced onions. Since no food processors are actively

engaged in the sales of frozen diced onions at the institutional market level, the indications from the sales test that this market would be fairly small seem to have been correct. National dehydrated onion usage by institutions which was previously projected in Chapter IV comes quite close to the actual 1962 usage of dehydrated onions by institutions. Thus, it would appear that the method used for projections in this study is reasonably valid. If we could not assume that results from a sales test were projectable, the institutional sales test would have little usefulness.

It was also assumed that the variables of price of the product, size and type of institutions in the test market and usage patterns of competing products would affect the institutional acceptance of a new food product. This assumption was shown to be valid by the results of the institutional sales test and onion utilization survey. When the price of frozen diced onions was increased to 25-27 cents per pound in February, 1962, sales of frozen diced onions dropped off sharply from the levels of previous months. The onion utilization survey revealed that there were great differences among types and sizes of institutions in the degree of use of processed onion products. These findings suggest that the following factors would be essential for future institutional sales tests: (1) The price of the tested product should be carefully controlled, and (2) The sample of institutions included in the test should be large enough to include all types and sizes of institutions.

H. Recommended Procedure for Institutional Sales Tests

The institutional sales test appears to be a promising technique for testing the institutional acceptance of new food products. The chief advantage of the sales test over other test methods such as the demonstration-interview thchnique is the fact that the tested product is actually offered for sale in a test market. Predictions of product acceptance can be made on the basis of sales records rather than on the basis of reactions or statements of potential buyers. This should make predictions of acceptance more reliable than those based on other test techniques if the sales test is properly conducted and controlled. Several factors were present in the Detroit sales test which may have affected the sales test results. Lack of control over cooperating salesmen, failure to select specific institutions to receive samples, lack of control over price of the tested product, and the use of only one test market are some of these factors. Based on the experience gained from the Detroit institutional sales test, the following method is recommended for testing institutional acceptance of new processed food products. (1) Select two cities for use as test markets or three, if possible. (2) Secure the cooperation of one of the principal food distributors serving the institutional market in each of the test market cities. Some form of remuneration should probably be given the distributors for their cooperation in the sales test. (3) Select a simple probability sample of single-unit feeding institutions in each test market city. The list of institutions paying privilege taxes for operating a public feeding establishment can be defined as the

universe of all feeding institutions in the test market. If possible all multi-unit firms should be included in the test along with the sample of single-unit firms. (4) Have samples of the product to be tested delivered to the selected institutions by distributor salesmen. After the institutions have had sufficient time to try the sample, salesmen should solicit reactions from buyers or chefs and attempt to sell the products. Salesmen should be briefed thoroughly on the conduct of the test and should be paid for the work of distributing samples and keeping records. (5) The tested product should be sold at different prices in different test markets to determine the effect of price on acceptance. (6) Weekly records should be kept of initial and repeat sales to each institution for a period of 12-16 weeks. (7) A supply of the tested product should be maintained in each test market to fill orders as sales develop. (8) The actual sales test should be followed by a survey to determine characteristics of buyers and non-buyers and reactions to the product.

I. The Predictive Model

The predictive model used in this study was patterned after the predictive model commonly utilized in retail sales testing experiments. Sales of a new processed food product in a test market were projected into national potential figures on the basis of the relationship between annual sales of single and multi-unit firms in the total U.S. public eating place business. The survey of onion utilization conducted in Detroit indicated that acceptance of processed food items is affected by (1) the type of ownership of an institution, (2) the size of the

institution, and (3) the type or class of institution (i.e. school, sandwich shop, restaurant, etc.). The acceptance of processed onion products seems to be highest among multi-unit institutions in general, large single-unit institutions, and schools or hospitals. The use of processed onions increases with the size of both single-unit and multi-unit institutions. (See Table V and Table XIV) Ideally a predictive model for projecting test market sales into national potentials should include all three of the above factors. Unfortunately, there are no national statistics presently available which break down volume figures for institutions by size or type as well as by type of ownership. The only way to make a valid test of the accuracy of a predictive model would be to compare projections from the model to national sales data. However, the predictive model used in this study would appear to be reasonably accurate.

This one trial of an institutional sales test is not sufficient to establish it as a fool-proof method for determining institutional acceptance of new food products. Additional trials and refinements of the method and predictive model proposed here will be necessary before they should be put into use by processors of new institutional food products. It is concluded that this method does hold promise as a satisfactory means of providing valuable and necessary information on the institutional acceptance of new food products.

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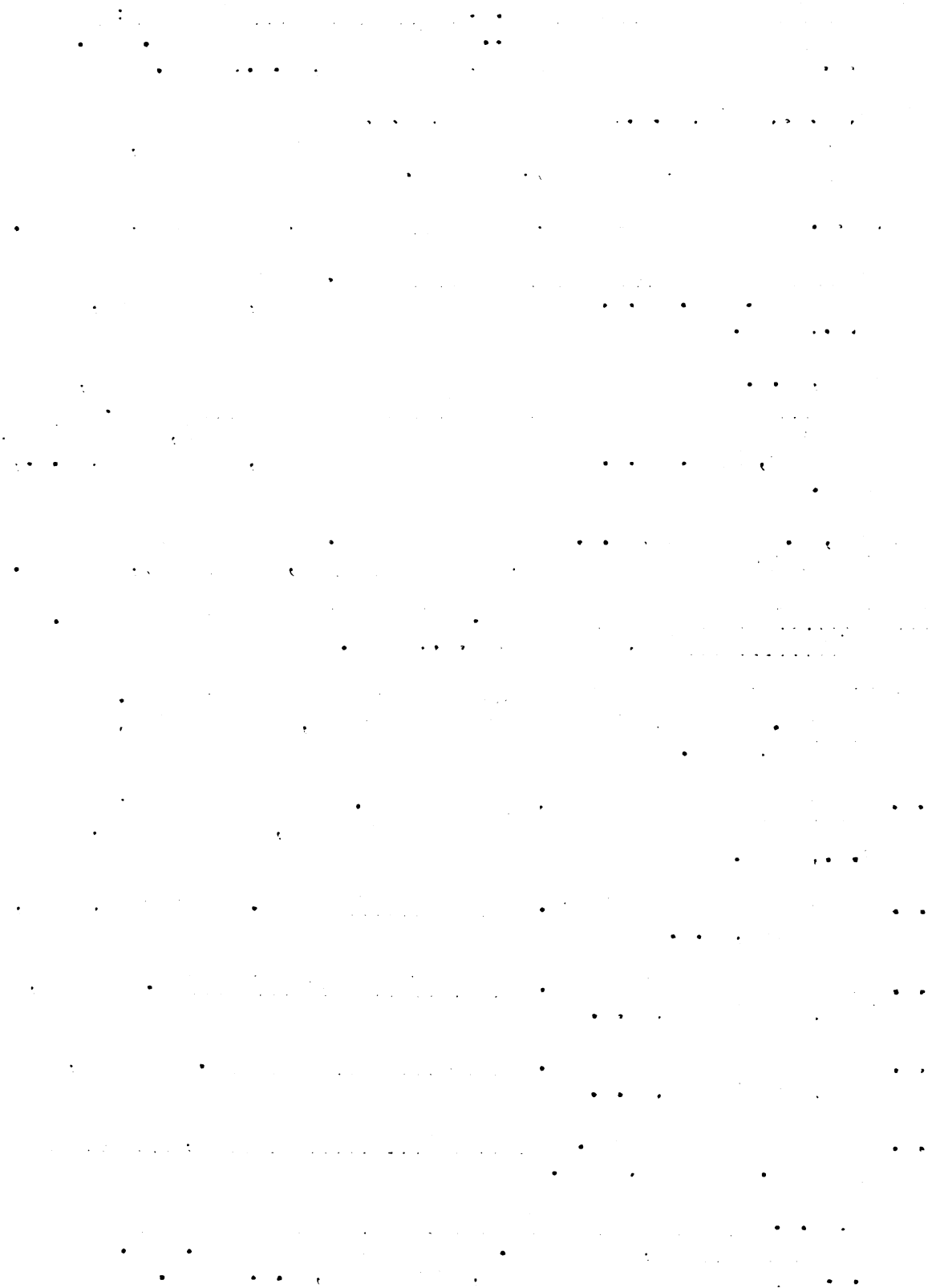

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APPENDIX

SURVEY QUESTIONNAIRE

Interview Number

Date

Interviewer

Type of Eating Place

GENERAL QUESTIONS

1. (a) Name of firm _____ Tel. No._____

   (b) Address _____

   (c) Name and position of respondent_____

2. How many full time employees are working in this establishment primarily engaged in food preparation?_____

3. What is the average number of customers served per week?

   a. (6-10:00) Morning_____
   b. (10-3:00) Noon_____
   c. (after 3) Evening_____

4. What is your dollar volume of sales per year?_____

5. How many pounds of onions do you use per week? Fresh onions_____, frozen diced onions_____, dehydrated onions_____, frozen onion rings_____, canned onions_____, other onion products_____.

6. What price did you pay per pound for your last purchase of the above products?

7. What percent of your onions do you use in the following foods: sandwiches, salads or relishes, soups or gravies, stews, fried with steak or liver, meatloaf or stuffings, flavoring for roasts or baked meats, onion rings, creamed onions, spaghetti sauce, and other?

8. Do you use fresh, frozen, canned, or dehydrated onions in each of the above foods?

9. Do you prefer a sweet type or pungent type of onion for the 11 foods listed above? Why?

10. Do you peel onions by hand?_____ Abrasively?_____ How?_____

11. Do you chop onions by hand?_____ Mechanically?_____ How?_____

12. What would you estimate your peeling and waste loss from a 50 pound bag of fresh onions to be? Under 5%, 5-9%, 10-20%, 20-30%, 30-40%, over 40%.

13. Do you prefer fresh onions____ or processed ones____? Why? Price differences, convenience, uniform flavor, storage factors, other (specify), If price is reason what is the amount of saving per pound of prepared onion?

FROZEN CHOPPED ONIONS

14. Have you seen frozen chopped onion products? Yes, No.

(a) Have you tried them? Yes, No.
(b) Why or why not?
(c) What type container would you prefer frozen chopped onions be packed in? Polyethylene bag, Paperboard box, Other, (specify).
(d) What size container of frozen chopped onions would you prefer? 1 pound, 2 pound, 3 pound, 5 pound, over 5 pounds. Specify size preferred.

(e) If the price of fresh onions is 5¢ per pound are you willing to pay an additional of: 0¢ per lb. for one lb. of frozen chopped onions, 2¢ per lb. for one lb. of frozen chopped onions, 4¢ per lb. for one lb. of frozen chopped onions, 6¢ per lb. for one lb. of frozen chopped onions, 8¢ per lb. for one lb. of frozen chopped onions, 10¢ per lb. for one lb. of frozen chopped onions.

(f) If the price of fresh onions is 5¢ per pound are you willing to pay an additional of: 0¢ per lb for one lb. of dehyd rated onions, 2¢ per lb. for one lb. of dehydrated onions, 4¢ per lb. for one lb. of dehydrated onions, 6¢ per lb. for one lb. of dehydrated onions, 8¢ per lb. for one lb. of dehydrated onions, 10¢ per lb. for one lb. of dehydrated onions.

DEHYDRATED ONIONS

15. Have you seen dehydrated onion products? Yes, No. When did you first see them?

(a) Have you tried or used dehydrated onion products? Yes, No, which ones, when, why or why not?
(b) Why did you stop using them?
(c) How much fresh onions does 1# of dried onions replace? How much fresh onions does 1 No. 10 can of dried onions replace?
(d) What size and type of container would you prefer for dehydrated onions? #10 cans, paper bags, 5 gallon drums, barrels or drums, glass jars?

FRENCH FRIED ONION RINGS

16. How often are F.F. onion rings on your menu? Never, once/week, once/month, continually, why not?

(a) Are F.F. onion rings ever a specialty of yours?
(b) Do you make your own F.F. onion rings or buy them prepared?
(c) Do you use F.F. onion rings for garnish or as a side vegetable dish?
(d) Do you prefer a lightly breaded or heavily breaded onion ring?
(e) What would you be willing to pay per pound for unbreaded, frozen onion ring slices? Cents per pound_____

17. What size onion rings do you prefer? Under 2 inches in diameter, 2-3 inches in diameter, 4 inches or larger?

18. Have you ever used frozen french fried onion rings? Yes, No.

(a) Do you prefer to use frozen onion rings or fresh prepared onion rings?
(b) How many servings do you get from one pound of frozen french fried onion rings?

	Number	Size (ozs.)
(a)	As a side dish?	Side dish
(b)	As a garnish?	Garnish

(c) What size package of frozen onion rings would you prefer (if you used them)? One pound, two pound, five pound, over 5 pound, portion pack.

(d) What are the principal drawbacks in using frozen french fried onion rings? Not much demand, inferior flavor, inferior breading, lesser quantity obtained than from fresh onions, breaks up easily and cannot stand the heat, cannot be fried in the same friers where potatoes are fried, needs more space to fry onions, batter does not stay, others (specify)

19. What type of onion ring would you prefer if you bought prepared onion rings? Raw unbreaded and frozen, raw unbreaded and unfrozen, raw breaded and frozen, raw breaded and unfrozen, partially cooked and frozen, fully cooked and unfrozen.

20. How many french fried potatoes do you use per week?_____lbs.

(a) Price of last purchase for frozen french fried potatoes? ____per lbs.
(b) How many servings do you get from one pound of frozen french fried potatoes? Number of servings, size of servings.
(c) What should be the price of 1 lb. of french fried onion rings in order to compete with french fried potatoes?

CANNED ONIONS

21. How often are creamed or whole boiled onions on your menu?

22. Have you ever used canned whole boiled onions? No, Yes, Why not?

(a) What size of canned whole onions would you prefer? 1/2 inch diameter, one inch diameter, larger than one inch.
(b) What container size and type would you prefer for canned onions? No. 10 can, 5 gallon can, other (specify), glass container, tin container.

23. Can frozen chopped onions be used in the following foods? On sandwiches, salads or relishes, soups or gravies, stews, fried onions for steak or liver, meatloaf or stuffings, flavoring for potroasts, baked meats or other meat dishes, creamed onions or other onion dishes, spaghetti sauce, other, why not?

24. Can dehydrated onions be used in the following foods? On sandwiches, salads or relishes, soups or gravies, stews, fried onions for steak or liver, meatloaf or stuffings, flavoring for potroasts, baked meats or other meat dishes, creamed onions or other onion dishes, spaghetti sauce, other, why not?

25. Could canned onions be used as a substitute for fresh onions in the following foods? On sandwiches, salads or relishes, soups or gravies, stews, fried onions for steak or liver, meatloaf or stuffings, flavoring for potroasts, baked meats or other meat dishes, creamed onions or other onion dishes, spaghetti sauce, other, why not?

CHECK THESE FACTS
WINTER GARDEN FROZEN CHOPPED ONIONS ARE
GREAT TIME SAVERS

Uses

1. Use in stews, soups, meatloaf or gravies.

2. Use on hamburgers or other sandwiches.

3. Wonderful for tossed salads and relishes.

4. Adds delicious fresh onion flavor to dressings, stuffings and sauces.

5. Nifty frozen chopped onions can be used anyway you can use fresh onions.

Save Money

1. No more waste from rot or peeling losses. (peeling loss amounts to about 30% of fresh onions)

2. No peeling labor costs.

3. No storage problems.

4. No handling of heavy bags.

5. Consistent, economical price--no week to week variations.

6. No variable quality product--always the same flavorful, high quality onions.

Save Time

1. No time lost in peeling and preparing--ready for use right from freezer.

2. No messy garbage disposal problem or bothersome odors in kitchens.

3. No procurement problems--your frozen food wholesaler has them now.