CONSUMER REACTION TO REDUCED PACKAGING IN THE SUPERMARKET

by

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Executive Summary

The per capita consumption of Canada's natural resources has risen to such a level that dealing with resulting waste is a major public issue. While there has been general acceptance of the principle of post-consumer waste recycling as a means of lessening the burden on sanitary landfill sites, many waste management professionals have turned their attention to the root problem -- the generation of the waste in the first place. If waste generation is the problem, then waste reduction "at source" is the solution.

Environment Canada estimates that 30% to 40% of municipal solid waste consists of packaging materials. The focus of the present study is the notion that much of the current packaging of consumer products could be eliminated without jeopardizing the various functions served by the package. Reducing the materials and energy inputs into product packaging could save the consumer money and lessen the waste disposal problem, as well as conserve natural resources for more essential uses.

The hypothesis tested was: The consumer prefers a heavily packaged product in the supermarket and is willing to pay for that level of packaging, even when a lightly packaged and lower-cost form of the product is provided.

To test this hypothesis, ten food and seven non-food products in two Toronto outlets of the Loblaws Limited supermarket chain were each displayed with and without their exterior layer of packaging ("light" versus "heavy" packaging). A price difference was established between the two forms of the product display to reflect the cost of the package. Sales were recorded over a four-week period in early 1979.

Seven of the 17 products tested showed close to or above 50% of total sales in lightly packaged form. The mean percentage of sales in the light packages of 41.3% indicates that there is substantial consumer acceptance of less costly packages.

There was no consistent pattern of purchases separating food and non-food products with respect to packaging chosen. There was, similarly, no consistent pattern of purchases in light versus heavy packaging relative to the price differentials. Also, there was no relationship between the sales success of the lightly packaged forms and the amount of colour on those packages.

While the hypothesis may be rejected tentatively, it is clear that further research is required, particularly in the field of consumer motivation in choice of packages.

The authors recommend that a small task force be established to publicize the current research among product marketers and consumer organizations, suggest further related research, and indicate to marketers what changes could be made to packages to reduce environmental impact. A feasibility study should be made with regard to the establishment at the federal level of a Package Review Board to examine both new and existing packages for environmental impact.

CHAPTER 1 - INTRODUCTION

One of the basic tenets of natural resources management is that "resources are not; they become." Put another way, a material in the physical environment is not properly considered a resource until man has found a use for it. For example, uranium was simply another element of the earth's crust before man determined its utility in controlled and uncontrolled nuclear reactions. Similarly, a revolution took place in consumer product packaging when it was discovered that petroleum, until then only a fuel source, could be transformed into a wide variety of plastics.

Modern industrialized society consumes renewable and non-renewable natural resources at an unprecedented rate, on both aggregate and per capita bases. Profligate use of these resources has magnified the problem of the collection and disposal of the waste created. Examination of residential solid waste data for Metropolitan Toronto for 1973 revels that 903,396 tons were collected and disposed of.[1] This amounts to approximately 900 pounds per person per year, each in his own home.

The early 1970's saw the general acceptance of post-consumer (post-use) waste recycling as a means of lessening the burden on solid waste sanitary landfill sites. Markets developed for used glass, metal, paper and, to a smaller extent, plastic.

However, in the past decade, many waste management professionals have come to understand that concentration on recycling as a management tool diverts attention from the root problem, which is the generation of the waste in the first place. When, for example, a soft drink bottle is returned for washing and refilling, one need not be concerned about recycling it, whereas a new institutional framework must be put into place if a non-refillable drink can is to be recycled. Without recycling, the former continues in its own cycle of use and re-use, while the latter becomes waste.

If waste generation is the problem, then waste reduction "at source" is the solution.

> "Canadians eat up a disproportionate amount of the world's resources. Accidents of geography confer on this country special responsibilities, not special rights to consume and waste. In the face of third world demands for a fair share, middle class concentration on recycling rather than reduction is as sadly misplaced as the search for a slenderizing studio to make up for a gluttonous

> diet. Reduced consumption, more durable quality products, fewer disposables, all this, some would say, must lead to fewer jobs. [Pollution] Probe refuses to believe that a healthy society must by definition be based on the ever-increasing production of waste."[2]

Perhaps the most salient components of solid waste and therefore a prime target for efforts at reduction at source, is consumer product packaging. Environment Canada recently estimated that 30% to 40% of municipal solid waste consists of packaging materials.[3] The question is whether the materials and energy input to package production can be reduced without jeopardizing current packaging functions. These functions may be listed as follows:

1) to enable storage and transport
2) to protect contents from damage during storage and transport;
3) to identify the product and its manufacturer;
4) to explain how to use the product (especially for items sold in self-service retail stores such as supermarkets);
5) to sell/advertise through graphic material and claims of quality and/or performance displayed on the package;
6) to render a small product of sufficient, final size that it is not amenable to shop-lifting.[4]

According to the Ontario government's Waste Management Advisory Board, "it has become increasingly obvious that materials and energy must be more efficiently utilized in the manufacture of products and packages and that efforts should be made to consider their potential for reuse or recycling.

"At the heart of the matter is the increasing need for packaging to be designed with regard for:

- demands upon raw materials and energy resources;
- air and water pollution and solid waste generation during manufacturing processes;
- degree of post-consumer waste generation (including potentials for reuse, recycling, and ease of disposal).

"For the most part, such considerations are not reflected in general packaging trends towards:

- greater use of throwaway containers;
- disposable products;
- laminated packaging systems which make recycling difficult;
- the use of non-biodegradable materials."[5]

Interest in eliminating what might be called "over-packaging" or extravagant, unnecessary packaging, has come not only from environmentally oriented consumer groups,[6] but also from the packaging and retailing industries. The 1978 Chairman of the Packaging Association of Canada, J. Keith Russell, stated during his term that inflation and the growing scarcity of resources would eventually force the packaging industry to follow the "conserver ethic", combined with a certain amount of sensible growth for the industry.[7] He foresees that per capita consumption of packaging will decrease for the above reasons.

Furthermore, the unexpected sustained popularity of generic or "no-name" ("no-frills") grocery products, and, indeed, of entire "no-frills" grocery stores, since the introduction of both in 1978, is an indication of the retailer's interest in supplying to the consumer a product with less elaborate packaging at a lower price.[8]

Currently, consumers experience little or no choice in the level of packaging for any one consumer product. For example, all brands and sizes of toothpaste must be purchased with a box enclosing the tube. Similarly, it is difficult to locate orange drink crystals in a bulk package rather than in portion-controlled pouches. Many package manufacturers and product marketers appear reluctant to reduce the amount of packaging used, often citing consumer preference as an important factor in their decision to continue using a high level of packaging. The present study seeks to corroborate or challenge the perception of consumer preference for heavy packaging.

CHAPTER 1 - FOOTNOTES

1 Pollution Probe. Recycling: Identifying the Barriers (A Municipal Solid Waste Study). Produced for Pollution Probe by Peter Middleton and Associates Limited. Summary Volume, p. 5.

2 Ibid. Summary Volume, p. 16.

3 Arthur Burgess, Waste Management Branch, Environment Canada, personal communication, March 1979. Note that these figures (30% - 40%) are averages; the proportion varies widely from community to community depending on the level and type of commercial enterprise. The Ontario Waste Management Advisory Board uses a similar figure for packaging as a percentage of consumer (residential) solid waste, indicated in its 1979 publication Packaging from an Environmental Perspective: A Summary of Recent Investigations: "Significantly, packaging now accounts for approximately one-third by weight of consumer-generated waste. In an effort to reduce waste generation, packaging must, of necessity, come in for close scrutiny."

4 John David Wood. Packaging and the Environment. Toronto: Pollution Probe. 1975. pp. 1-3.

5 Waste Management Advisory Board (Government of Ontario). Packaging from an Environmental Perspective: A Summary of Recent Investigations. Toronto. 1979. Prepared by the Packaging Committee, WMAB.

6 Pollution Probe's involvement in consumer packaging issues dates back to 1970, with its Report on Soft Drink Containers. A representative of the organization sat on the Ontario Solid Waste Task Force, the predecessor of the Waste Management Advisory Board, from 1972 to 1974. Pollution Probe submissions to the Task Force on soft drink and milk packaging were reflected in the final report of the Task Force in 1974. In 1975, Pollution Probe published Packaging and the Environment, a report which developed a formula for the environmental impact of any package.

7 The Globe and Mail (Report on Business), March 9, 1978.

8 The Toronto Star, October 2, 1978. However, two points of interest here are: 1) generic packaging has not been very successful in British Columbia, as contrasted to its broad success in Ontario (The Toronto Star, November 1, 1978); 2) some members of the Packaging Association of Canada are skeptical of the savings to the consumer that can be attributed to the packaging of generic products, as opposed to lower grades of the product itself (The Globe and Mail, Report on Business, March 22, 1978).

CHAPTER 2 - BACKGROUND

Policy Implications

There has been some degree of activity in the area of developing environmental criteria for consumer product packages within Environment Canada (Waste Management Branch) and Energy, Mines and Resources Canada (Conservation and Renewable Energy Branch). In addition, the Waste Management Advisory Board of the Government of Ontario has been very active in this field.[1] However, the focus of Consumer and Corporate Affairs as regards packaging activity has largely been in the areas of implementation of the Consumer Packaging and Labelling Act and in the Canadian conversion to metric weights and measures.

Although the provinces have the major authority in the area of product package design for products (such as milk and soft drinks) that do not usually cross provincial boundaries, there is scope at the federal level for developing environmental packaging criteria for products of national manufacturers that cross the country and hence do not lend themselves to control at the provincial level.

Since the present study examines the packaging of national-brand products found in the supermarket, it becomes evident that the only effective control on the amount and type of materials in the package would have to be imposed at the federal level.

Related Research

To the knowledge of the authors, there exist no previous empirical data on consumer preference for heavily or lightly packaged grocery products in a normal shopping setting. There are many examples of single-product testing. Before introducing a new product, manufacturers often carry out tests which include the consumer's response to different packages. But no studies have taken a variety of products from several manufacturers and examined the impact of different packaging styles on consumer choice in a supermarket setting.

A bibliography of relevant literature may be found as Appendix 1. It should be noted that many of the packaging studies listed there were written before there was significant public interest in the economic and environmental effects of extravagant packaging. In fact, many of those studies explore the advantages of heavy packaging (the "silent salesman") in the self-serve retail store. However, as tastes and priorities in packaging change, there is a need for review of what may be viewed as out-dated packaging concepts.

Hypothesis

The hypothesis to be tested is: The consumer prefers a heavily packaged product in the supermarket and is willing to pay for that level of packaging, even when a lightly packaged and lower-cost form of the product is provided.

It must be noted that the purpose of this study is not to design a new, more environmentally appropriate packaging system, but, rather, to work with existing packages to determine whether there is enough consumer interest in lighter packaging to warrant package re-design using fewer and less expensive materials.

CHAPTER 2 - FOOTNOTES

1. The Ontario Waste Management Advisory Baord publishes a Summary of Activities every six months. This may be obtained through the Board offices at 1 St. Clair Avenue West, Toronto, Ontario, M4V 1K7. (416) 965-3007.

CHAPTER 3 - METHOD

Data Sources

The data sources were two Toronto outlets of the Loblaws Limited supermarket chain. The stores are located at 301 Moore Avenue (Figure 1) and 555 Sherbourne Street (Figure 2). Clientele of both stores cover a broad range of ethnic groups. The clientele of the Moore Avenue store had an average household income that was 22% above the average for Metropolitan Toronto in 1971 (according to census data), whereas clientele of the Sherbourne Street store had an average household income 21% below the Metropolitan Toronto average. Data were collected every business day over a four-week period early in 1979.

In order to make a statistically valid comparison between socioeconomic strata, at least six store outlets in each of two well-defined socioeconomic strata would be required. It was felt that the extra comparison that could be so provided would not justify the great increase in manpower that would be required for data collection. To effect an average representation of the sales in two stores with a broad range of socioeconomic strata in the clientele, data from the two stores chosen were amalgamated in all instances.

Data Requirements

The two categories of products were food and non-food items in a supermarket. Because of the type of store chosen (i.e., supermarket), the non-food items were restricted in toiletry products. At least six products in each category were required to permit a statistical comparison of the two.

The criteria for product selection were as follows:

1) the product must cost less than $5.00
2) the price of the "extra" packaging must be measurable and at least as large as 1¢.
3) the light packaged form of the product (i.e., the product with the extra packaging removed) must be large enough such that ease of shop-lifting is not a problem.
4) the product must be identifiable, with complete information required by law, when the extra packaging is removed. (Note further discussion of this criterion below.)
5) The product must be adequately protected without the extra package.

FIGURE 1 - APPROXIMATE CLIENTELE AREA FOR LOBLAWS STORE AT 301 MOORE AVENUE

X = Store Location

SOURCE: Loblaws Limited

FIGURE 2 - APPROXIMATE CLIENTELE AREA
FOR LOBLAWS STORE AT 555 SHERBOURNE STREET

X = Store Location

SOURCE: Loblaws Limited

6) the alteration required to display the product without the extra package must not be labour-intensive. Also, it must in no way appear to mutilate the product, or in fact do so.
7) the product must have a turnover rate (during the survey period) that is sufficiently high as to allow an adequate volume of sales for reliable statistical analysis. Products will therefore tend to be popular items rather than specialty products.
8) the product must have package components such taht the product can be displayed adequately, although not necessarily in a traditional or conventional manner, without the extra package.
9) The product must be exactly the same product and perform exactly the same function without the extra package as with that package.

The existence of the above criteria for product selection meant that the study does not deal with a randomly selected group of products. Hence, any statistical inferences made from the data would be somewhat unreliable.

An intensive search for products fulfilling all of the above criteria took place in December 1978. It should be noted that criterion (4) was the most difficult to satisfy and hence was the primary reason that several heavily packaged products were rejected. A typical case would be a product with an outer boxboard box or sleeve displaying all the information required under the Consumer Packaging and Labelling Act and the Food and Drugs Act[1] but the inner container of which contained no such information. (A common example is a plastic tub of margarine enclosed in a boxboard sleeve.) This study, therefore, concentrates on the most obvious examples of excess packaging, those products in which identical, complete information is given on both "outer" and "inner" packaging components or packaging "layers".[2] There are countless examples of excess packaging in a single layer but such products clearly do not lend themselves to the present study.

Criterion (3) eliminated many products that had two fully informative layers in that removal of the outer layer resulted in a product of very small, "pilferable" size. A typical case here would be a product enclosed in a plastic "blister" or "bubble" and mounted on boxboard. (A common example is a container of razor blades on a blister/boxboard holder.)

It should also be noted that the requirement to choose packages with two fully informative layers meant that staple grocery items, the cost and degree of convenience of which are kept to a minimum through simple packaging, had to be eliminated from consideration.

For each product, a price differential had to be developed to indicate to the consumer the value of the extra packaging removed, and hence the saving if the more lightly packaged product were purchased. The price differentials were arrived at by contacting either the packaging manufacturer or the packaging user company and inquiring as to the price per thousand for the package. The price here consists of the cost to the product manufacturer of the materials supplied by the packaging manufacturer.

It should be noted that the price per package does not include either the product manufacturer's margin when selling to the retailer or the retailer's margin when selling to the consumer. Also, the price per package includes neither the additional handling and filling costs to the product manufacturer of that extra package nor the higher distribution costs (in general) incurred by that party for the heavier package. Furthermore, the price differential for each product does not reflect the "social" costs of the heavy package, such as the costs of collection and disposal. For these reasons, the price differentials may be considered to be conservative estimates of the actual cost of the package to the consumer.

Fractions of a cent equal to or greater than 0.5 were rounded up, while fractions less than 0.5 were rounded down.

Table 1 indicates the products chosen, the price differentials, and the changes made to each package in order to display it without the extra packaging layer.

It must be emphasized that the removal of the outer layer sometimes resulted in a package that was not nearly as attractive as the original package, whereas in other cases the lighter package was just as attractive to the consumer as the heavier package. For example, the lack of colour on the sachets of soups, hot chocolate and instant breakfasts may be viewed as a handicap in relation to the purpose of the study. On the other hand, it was felt that the appearance of one product in particular -- Tobasco Pepper Sauce -- actually improved upon removal of the outer packaging. The results that might be obtained for the less attractively displayed products could therefore be expected to be a conservative estimate of the consumer's interest in eliminating unnecessary packaging, particularly given the fact that no special attention was brought to the money to be saved upon purchase of the lightly packaged product. The shortcomings of the inner packages mentioned here, especially those related to colour, could be easily rectified upon package re-design, without significant (or, in fact, any) increased cost.

TABLE 1A - TEST PRODUCTS, METHODS OF DISPLAY, AND PRICE DIFFERENTIALS: FOOD PRODUCTS

PRODUCT	SIZE	TYPE OF PACKAGE	METHOD OF DISPLAY IN LIGHTLY PACKAGED FORM	PRICE DIFFERENTIAL TO CONSUMER	PRICE DIFFERENTIAL AS % OF TOTAL PRICE*
Tobasco Pepper Sauce	2 fl. oz.	Bottle in box	Removal of box	2¢	2.4%
Laura Secord Pudding	4 x 5 oz.	Cans in boxboard sleeve	Removal of sleeve; securing cans together with clear tape	4¢	3.1%
Del Monte Pudding	4 x 5 oz.	As above	As above	41	3.1%
Carnation Hot Chocolate	12 x 1 oz.	Sachets in box	Removal of box; securing sachets together with clear tape	5¢	4.7%
Lipton's Cup-a-Soup	4 x 12 g.	As above	Removal of box; stapling sachets together	3¢	4.6%
Nestle Souptime	4 x 7 g.	As above	As above	3¢	4.6%

TABLE 1A - CONT'D

PRODUCT	SIZE	TYPE OF PACKAGE	METHOD OF DISPLAY IN LIGHTLY PACKAGED FORM	PRICE DIFFERENTIAL TO CONSUMER	PRICE DIFFERENTIAL AS % OF TOTAL PRICE*
Allen's Apple Juice	4 x 10 fl. oz.	Cans in box-board sleeve	Removal of sleeve; securing cans together with clear tape	5¢	3.7%
Libby's Tomato Juice	6 x 5.5 fl. oz.	As above	As above	5¢	3.7%
Carnation Instant Breakfast**	6 x 8 oz.	Sachets in box	Removal of box; stapling sachets together	6¢	4.3%

*heavily packaged form
**two flavours: Vanilla and Chocolate

TABLE 1B - TEST PRODUCTS, METHODS OF DISPLAY, AND PRICE DIFFERENTIALS: NON-FOOD PRODUCTS

PRODUCT	SIZE	TYPE OF PACKAGE	METHOD OF DISPLAY IN LIGHTLY PACKAGED FORM	PRICE DIFFERENTIAL TO CONSUMER	PRICE DIFFERENTIAL AS % OF TOTAL PRICE*
Crest Toothpaste	150 ml.	Tube in box	Removal of box	2¢	1.1%
Colgate Toothpaste	150 ml.	As above	As above	2¢	1.0%
Listerine Antiseptic	500 ml.	Bottle in box	As above	5¢	2.5%
Ban Antiperspirant Roll-On	2.5 fl. oz.	As above	As above	6¢	3.7%
Secret Antiperspirant Roll-On	2.5 fl. oz.	As above	As above	6¢	3.9%
Arrid Antiperspirant Roll-On	2.5 fl. oz.	As above	As above	6¢	3.8%
Noxzema Skin Cream	110 ml.	Jar in box	As above	4¢	2.5%

*heavily packaged form

Display of Products

A "double" display of each product was created, each in its normal location in the store. One half of the shelf space consisted of the product in its normal package and the other half, the product with the outer layer removed and changes made to the inner layer when necessary (see Table 1). Products which were sold to multiple individual servings (soups, juices, puddings, hot chocolate, instant breakfasts) were retained in those same multiples so as not to affect consumer choice of quantity purchased at one time.

It must be emphasized that anonymity was maintained in displaying the products on the shelf. That is, there was no promotion of any sort. The only indication of the price differential was the price sticker on each item and the price marker on the shelf. (The heavily packaged product bore its normal price, the lightly packaged product a lower price based on the computed price differential.) The intention in this instance was to assure that total sales would not be affected as they would be if added intention were given (as, for example, when a product is on "special").

On each business day (Monday through Saturday) for four weeks, numbers of products sold in light and heavy packages were tabulated by Pollution Probe personnel (see sample data sheet in Appendix 2). Re-stocking of the products in both kinds of packages was performed whenever necessary. Two important points of information regarding the length of time of displays are:

1) when an equal space was not available for light and heavy packages (i.e., five rows of shelving instead of four or six, in total), the amount of space devoted to each type of package was alternated regularly so as to give an equal space over the four-week period.

2) Many of the test products were placed on "special" by the retailer at different points in the test period. During the times in which the "specials" were on, the lightly packaged forms of the products on "special" was removed from the shelves and hence no data were collected for either lightly or heavily packaged forms during this period. The length of time that each product was actually surveyed will be presented in Chapter 5 (Analysis).

Alternative Methods

For a study such as the present one, interviews of store clientele while they are shopping, in which each consumer is asked which form of packaging he would prefer (i.e., light versus heavy), would seem to be the primary alternative method. This method was rejected on the strength of the notion that what an individual says he will buy and what he actually does buy, may be very different. Of course the interest in this study is what consumers actually do purchase.

One form of interview which might have been useful but which was not performed because of attendant manpower requirements, would be to question some of the purchasers of one of the test products after each individual had made his decision between heavy and light packages. Two questions which remain unanswered here are:

1) what percentage of the purchasers of a test product actually noticed either the difference in packaging or the difference in price?

2) of those consumers who did notice either or both of the abobve, what percentage chose the heavy package and what percentage chose the light package?

A further alternative method would be to conduct the survey in much the same way, but to deliberately draw attention to the price differentials. This practice would, presumably, eliminate the need to ask question (1) above, so that emphasis could be placed on the answer to question (2). Of course, under this regime, total sales would almost certainly be affected, since the consumer is attracted to special displays. But consider how the level of marketing success for generic or "no-name" ("no-frills") products in supermarkets might have differed had no special attention been paid to these products, either in-store or in newspaper and television advertisements.

CHAPTER 3 - FOOTNOTES

1 The required information includes declaration of net quantity, identity and place of business of the product manufacturer, and, in the case of goods, a list of ingredients in descending order of weight.

2 There are a number of justifications advanced as regards complete information on two layers of packaging. For example, this practice would enable the small retailer to sell singly, products packaged originally in multiples (e.g., serving-size tins of tomato juice). Also, the information on the inner layer is useful for products the outer layer of which the consumer normally discards soon after purchase (e.g., a jar of skin cream in a box).

CHAPTER 4 - ANALYSIS

Table 2 and Table 3 show the results of the four-week survey. Note again that data for the two tests stores have been combined in all cases.

Summary of Findings

a) It is the assessment of Loblaws Limited officials that the present survey has not measurably influenced total sales of any of the test products.

b) Table 2 serves to confirm that the sample size was sufficiently large, as evidence by the evenness of the percentage sales for each lightly packaged product over the three time periods given (two weeks, three weeks, and four weeks). Nevertheless, there were occasional anomalies. For example, Secret Antiperspirant Roll-On showed a substantial difference between two-week sales and four-week sales. One suggested reason for this difference is that Secret participated in the survey during only ½ of the 8 weeks (total of two stores). On the other hand, there can be little explanation for the variation shown in Table 2 for Libby's Tomato Juice.

c) Observation of Table 3 indicates the following:

   i) Seven of the 17 products showed close to or above 50% sales in lightly packaged form. The lowest showing was 26% for Colgate Toothpaste. Even this relatively low percentage is impressive given the fact that the product is one which has been on the market for several decades in a package (the outer box) that is well established in the consumer's consciousness.

   ii) The mean percentage of sales in light packages of 41.3% of total sales indicates that there is substantial consumer acceptance of less costly packages.

   iii) There was no consistent pattern of purchases separating food and non-food products. Some food items, such as Tobasco Pepper Sauce, sold very well in the lightly packaged form, whereas others, such as Laura Secord Chocolate Pudding, did not fare well at all. Similar comparisons can be made for the non-food items.

   iv) There was no consistent pattern of purchases in light versus heavy packaging relative to the price differentials. Some items have a large price reduction in the light package form sold well in that form (for example, Secret Antiperspirant Roll-On at 6¢), while

TABLE 2 - PERCENTAGES OF PRODUCT SALES IN LIGHTLY PACKAGED FORM ON TWO-, THREE-, AND FOUR-WEEK BASES

	PRODUCT	2-WEEK SALES (WEEKS 1+2)	3-WEEK SALES (WEEKS 1+2+3)	4-WEEK SALES (WEEKS 1+2+3+4)
FOOD	Tobasco Pepper Sauce	74%	77%	76%
	Laura Secord Pudding	17%	21%	28%
	Del Monte Pudding	24%	24%	27%
	Carnation Hot Chocolate	33%	30%	31%
	Lipton's Cup-A-Soup	29%	31%	33%
	Nestle Souptime	54%	48%	48%
	Allen's Apple Juice	39%	37%	39%
	Libby's Tomato Juice	71%	58%	56%
	Carnation Instant Breakfast, Vanilla	44%	45%	49%
	Carnation Instant Breakfast, Chocolate	46%	45%	48%
NON-FOOD	Crest Toothpaste	26%	31%	31%
	Colgate Toothpaste	31%	29%	26%
	Listerine Antiseptic	57%	55%	53%
	Ban Antiperspirant Roll-On	24%	28%	43%
	Secret Antiperspirant Roll-On	31%	50%	60%
	Arrid Antiperspirant Roll-On	36%	38%	36%
	Noxzema Skin Cream	36%	41%	44%

TABLE 3 - PERCENTAGES OF TOTAL SALES IN LIGHTLY PACKAGED FORM IN RELATION TO FOOD/NON-FOOD STATUS, DISPLAY-WEEKS, AND PRICE DIFFERENTIALS

FOOD/	PRODUCT	% SOLD IN LIGHT PACKAGE, 4-WEEK	NUMBER OF DISPLAY-WEEKS*	PRICE DIFFERENTIAL
F	Tobasco Pepper Sauce	76%	8	2¢
NF	Secret Antiperspirant Roll-On	60%	4½	6¢
F	Libby's Tomato Juice	56%	7½	5¢
NF	Listerine Antiseptic	53%	8	5¢
F	Carnation Instant Breakfast, Vanilla	49%	8	6¢
F	Carnation Instant Breakfast, Chocolate	48%	8	6¢
F	Nestle Souptime	48%	4	3¢
NF	Noxzema Skin Cream	44%	8	4¢
NF	Ban Antiperspirant Roll-On	43%	8	6¢
F	Allen's Apple Juice	39%	8	5¢
NF	Arrid Antiperspirant Roll-On	36%	6½	6¢
F	Lipton's Cup-A-Soup	33%	6	3¢
F	Carnation Hot Chocolate	31%	8	8¢
NF	Crest Toothpaste	31%	7	2¢
F	Laura Secord Pudding	28%	6½	4¢
F	Del Monte Pudding	27%	6	4¢
NF	Colgate Toothpaste	26%	8	2¢

* Maximum number of display-weeks = 2 stores x 4 weeks = 8 weeks. Products placed on "speical" by the retailer were pulled from data collection while on "special"; length of time on "special" has been deducted from the maximum of 8 weeks.

others with large reductions sold poorly without the extra packaging (for example, Carnation Hot Chocolate at 8¢).

v) Although not apparent from Table 3, there was no correlation between sales success of the lightly packaged forms and the amount of colour on those packages. It might be expected that items displayed in inner sachets with only one- or two-colour printing would not be appealing to the consumer. In fact, the Carnation Instant Breakfasts sold reasonably well in this form (49% and 48% of total sales). On the other hand, a similar package, the sachets of Carnation Hot Chocolate, gave a much poorer showing (31% of total sales).

vi) It was considered to be of interest to determine whether any of the test products had generic ("no-name") equivalents, which might affect the results of the study. According to Loblaws officials, there were generic equivalents (though in packages of different sizes) for Carnation Hot Chocolate, Allen's Apple Juice, Crest Toothpaste and Colgate Toothpaste. However, the only effect that the generic products could have would be to alter the total sales of the brand-name products, rather than the proportion sold in either heavily or lightly packaged form, since heavy advertising has been used to promote the generic products at the expense, one might say, of the un-advertised, lightly packaged products in this test.

Statistical Analysis of the Data

In an attempt to explain the variation in consumer responses to lightly packaged products, a few basic statistical tests were conducted on the data.

It must be stressed, however, that data limitations are likely to pose serious problems in terms of the extent to which statistical inference can be performed.

The first test was an attempt to determine whether the attractiveness of lightly packaged products affects purchaser response. Light packaging was achieved in two ways: (a) simple removal of box or sleeve, and (b) box or sleeve removal with some stapling or taping together of loose contents. On the assumption that the latter is less desirable (that is, less attractive), the hypothesis can be tested that a smaller percentage of lightly packaged purchases will be in products with this less attractive

packaging. Unfortunately, this did not seem to be a determinant. The number of products of type (b) method of re-packaging that sold 45% or over in lightly packaged form was actually greater than the number of products of the more attractive type (a) method of re-packaging -- that is, four products versus three, respectively (see Table 4).

The second test was whether response was dependent on the type of product (i.e., food versus non-food). The hypothesis was tested that the acceptance of heavily packaged food products would be higher than the acceptance of lightly packaged food products, whereas one might not expect to find the same situation for non-food products, since they are items with which the consumer does not have as intimate a contact as he does with food. Again, however, no significant difference between food and non-food products arose (see Table 4). Also, the number of food products that sold 45% or over in lightly packaged form was actually greater than the number of non-food products -- that is, five versus two, respectively. One might expect a difference in light package acceptance between staple and non-staple items. However, none of the products chosen (with the exception of toothpaste and, perhaps, antiperspirants) could be considered staple products.

The third test was whether consumer response was dependent on the price differential (as a percentage of the total product price) of heavily versus lightly packaged products. (Refer back to Table 1, which lists these percentages.) Unfortunately, no correlation existed between percentage savings and consumer response.

Though each of these tests is incapable of explaining variation in consumer response, this should come as no great surprise. Consumer tastes and preferences are notoriously difficult to analyze at the best of times and, given the limited scope of the present research, it is not surprising that simple correlations such as these are inconclusive.

Since consumer response does not seem to be heavily dependent on some of the more traditional predictors (i.e., price and appearance), this suggests the need for in-depth consumer testing on a post-purchase basis, as suggested under Alternative Methods in Chapter 3. Such testing might explain consmer buying behaviour from a socioeconomic point of view.

The author suggests that there is insufficient support for the stated hypothesis - that the consumer prefers a heavily packaging product in the supermarket and is willing to pay for that level of packaging, even when a lightly packaged and lower-cost form of the product is provided -- to warrant its acceptance generally. Further study and possible policy development in the area of environmental criteria for packages of nationally distributed consumer products would seem to be called for.

TABLE 4 - GROUPING OF DATA FOR STATISTICAL INFERENCE

% OF PRODUCT SOLD IN LIGHT PACKAGING	METHOD OF REPACKAGING		TYPE OF PRODUCT		% PRICE DIFFERENTIAL LIGHT V. HEAVY PACKAGE				
	SIMPLE BOX/ SLEEVE REMOVAL (A)	BOX/SLEEVE REMOVAL WITH TAPPING/STAPLING (B)	FOOD	NON-FOOD	0.5.-1.4	1.5-2.4	2.5-3.4	3.5-4.4	4.5+
65%	1 (100%)	0 (0%)	1 (100%)	0 (0%)	-	1 (100%)	-	-	-
55 - 64%	1 (50%)	1 (50%)	1 (50%)	1 (50%)	-	-	-	2 (100%)	-
45 - 54%	1 (25%)	3 (75%)	3 (75%)	1 (25%)	-	-	1 (25%)	2 (50%)	1 (25%)
35 - 44%	3 (75%)	1 (25%)	1 (25%)	3 (75%)	-	-	1 (25%)	3 (75%)	-
34%	2 (33%)	4 (67%)	4 (67%)	1 (33%)	2 (33%)	-	2 (33%)	-	2 (33%)

CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Many package manufacturers and product marketers appear reluctant to reduce the amount of packaging used, often citing consumer preference as an important factor in their decision to continue using a high level of packaging. The present study has attempted not to design a new, more environmentally appropriate packaging system, but, rather, to work with existing packages to determine whether there is enough consumer acceptance of lighter packaging to warrant package re-design using fewer and less expensive materials.

A tentative conclusion can be drawn from this study that the consumer is willing to accept a product with a less costly package. Forty-one percent of the total sales of the 17 test products were in the lightly packaged form, causing rejection of the hypothesis that most consumers want, and are willing to pay for, heavy packaging.

Specific Recommendations

As is the case in almost every research field, pioneering studies must be refuted or corroborated through additional testing and analysis. The present study appears to be a first in the field of consumer response to decreased packaging (with attendant lower product cost) in a multiple-product, real-life shopping environment.

This study has not examined the motivations of consumers in their choice of light or heavy packaging. How many individuals noticed the price differential? Of those who noticed these differences, how many chose the less costly packaging and why? Therefore, the authors recommend further research to address the following issues:

i) the motivation of the consumer in choosing a light or heavy package when it is confronted for the first time;
ii) the contribution of socioeconomic variables such as income level to the choice of light or heavy package;
iii) the behaviour of the consumer when he purchases the product for the second time. The choice of heavy or light packaging in the second purchase would seem to be particularly important in determining objectively the consumer's reaction to a lightly packaged product after having purchased it for the first time, and, it

would follow, his expected behaviour over the longer term;

iv) the role that advertising could play in increasing the interest in the lightly packaged products.

As well as further research in supermarkets, it would be of considerable interest to perform tests on non-durable household goods (i.e., products that are consumed relatively quickly and frequently in the home) that may be purchased in other types of retail stores. The two most likely data sources would be drugstores and, to a lesser extent, hardware stores.

The authors sincerely hope that further initiatives in this research area will come from both government and the packaging and retailing industries.

General Recommendations

With a view to the broader issue of environmental criteria in packaging design, the authors recommend that a task force be established to:

a) publicize the present study among product marketers and consumer organizations;
b) formulate suggestions for further research; and
c) provide to product manufacturers and retailers practical information on the changes that might be made in packages to render them more acceptable from the view of environmental impact.

The task force should be made up of four individuals, one from each of the following interest groups:

i) the federal government
ii) the retail sector
iii) the packaging/marketing sector
iv) consumer/environmental organizations

In order to be effective, the members of the task force would have to be chosen on teh basis of their own interest in seeing a shift toward more economic and socially desirable packaging. Cooperation within the task force would be the key to its success.

While the work of the task force is proceeding, it might also be valuable to establish a committee with representatives from government, industry and consumer groups to debate the feasibility and desirability of a Package Review Board. Such a board could be established to evaluate each new package in terms

of various economic, societal, environmental and other criteria. In addition, it could reexamine existing packages and suggest changes to those with the greatest environmental impact.[1]

While some decisions relating to package design are made at the provincial level (such as the design and "refillability" of beverage containers), many consumer products are manufactured by nationally based companies which take their cues regarding packaging criteria not from the provinces but from Ottawa.[2] Hence, efforts at the federal level, such as those recommended above, could result in policy development in the area of materials input to packaging and methods of reducing that input without jeopardizing the functions that packaging fulfills.

Even before the establishment of a Package Review Board, the packaging task force mentioned above may wish to explore a number of options for reducing the environmental impacts of packaging. These may include:

i) bringing to light cases in which the quantity of packaging (for example, certain instances of double layering) could be reduced;
ii) indicating on each package the total cost of the package itself (including product manufacturer's and retailer's normal margins as well as collection and disposal costs), so that the consumer may know how much of the total product cost is taken up in packaging;[3]
iii) a tax on wasteful packages to discourage their use and purchase. (Such a tax has already been proposed, and debated vigorously, for soft drink cans in Ontario.)

CHAPTER 5 - FOOTNOTES

1 The environmental impact of a package may be determined on the basis of the RESWAP Model developed for the Ontario Waste Management Advisory Board by Stevenson and Kellogg Management Consultants. The word RESWAP is an acronym drawn from the identifying terms of the impact categories or sectors:

1. (R)aw materials consumed, including process water;
2. (E)nergy consumed and recovered from each stage of production and use cycles;
3. (S)olid wase produced during each stage of production processes;
4. (W)aterborne wastes and pollutants produced at each stage of production processes;
5. (A)tmospheric pollution, including noise, produced at each stage of production processes;
6. (P)ost-consumer solid wastes, including litter, potentials for reuse and/or recycling, and residual solid wastes.

2 Note, for example, manufacturers' response to the Consumer Packaging and Labelling Act in Consumer and Corporate Affairs' Report of the Food Policy Group entitled "Food Packaging and Labelling Costs and the Cost Effects of Recent Government Legislation" (November 1977).

3 Implementation of this suggestion would, however, be only a step toward more economical packaging, since, while it brings to the consumer's attention the cost of the packaging, it provides no alternative to the heavy packaging.

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APPENDIX 2: SAMPLE DATA SHEET (ONE STORE)

DATE	NUMBER ON SHELF		CASES OPENED	NUMBER ADDED TO SHELF		NUMBER REMAINING ON SHELF		NUMBER SOLD	
	UNPACK	PACK		UNPACK	PACK	UNPACK	PACK	UNPACK	PACK
Wed. Feb. 21	4	5				3	4	1	1
Thur. " 22	3	4				3	4	0	0
Fri. " 23	3	4				2	4	1	0
Sat. " 24	2	4				0	0	2	4
Mon. " 26	0	0	1 c. 24		+24	0	24	0	0
Tues. " 27	0	24		+8	-8	8	16	0	0
								4	5
Wed. Feb. 28	8	16				8	16	0	0
Thur. Mar. 1	8	16				6	16	2	0
Fri. " 2	6	16				5	15	1	1
Sat. " 3	5	15				3	15	2	0
Mon. " 5	3	15		+4	-4	6	11	1	0
Tues. " 6	6	11				5	11	1	0
								7	1
Wed. Mar. 7	5	11				4	11	1	0
Thur. " 8	4	11		+4	-4	7	6	1	1
Fri. " 9	7	16				5	5	2	1
Sat. " 10	5	5				4	5	1	0
Mon. " 12	4	5				2	5	2	0
Tues. " 13	2	5	1 c. 24	+2	+22	4	27	0	0
								7	2
Wed. Mar. 14	4	27				4	27	0	0
Thur. " 15	4	27				2	26	2	1
Fri. " 16	2	26		+3	-3	4	23	1	0
Sat. " 17	4	23		+1	-1	2	21	3	1
Mon. " 19	2	21		+1	-1	3	19	0	1
Tues. " 20	3	19				2	18	1	1
								7	4
								25	12

NOTE: For purposes of confidentiality, the name of the product has been deleted from this data sheet.

DATE DUE
DATE DE RETOUR

CARR McLEAN 38-296