

AN ABSTRACT OF THE THESIS OF

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Behaviors of Independent Retail Pharmacies

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Abstract approved: -

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The study investigated the prescription drug purchasing behaviors of independent retail pharmacies, and selected pharmacy characteristics which may be related to purchasing behaviors. The purchasing function was considered as a major area of concern for independent pharmacies in attempting to improve operating efficiencies, particularly in view of increased competition from large scale retailing and institutional health care organizations. Attention was directed to purchasing patterns exhibited from all sources, and particularly to those which would provide relatively low per-unit drug costs. The findings indicated that pharmacy size was the only explanatory characteristic related to the use of sources of supply associated with lower per unit

drug costs. Thus, one alternative is that pharmacies must increase in size in order to attain greater purchasing advantages. One proposed means was to integrate horizontally and vertically into cooperative-type organizations to achieve greater operating economies. The findings also led to the conclusion that the purchasing function may not be effectively or efficiently managed in independent retail pharmacies.

A Study of the Prescription Drug
Purchasing Behaviors of
Independent Retail
Pharmacies

by

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CHAPTER I

INTRODUCTION AND STATEMENT OF PROBLEM

Contemporary American society has become increasingly concerned with the manner in which health services are being provided. A series of public and private commissions studying health services have concluded that the American health care system is in a state of crisis and in need of change. The system has been criticized for being costly and inefficient, and for providing health services which are fragmented and inaccessible to large population segments.

The drug subsystem, as part of the medical care system, has also been criticized for being fragmented and for providing services in a non-integrated and inefficient manner. Drug services have historically been distributed to the American public through individually owned and managed "independent" retail pharmacies, most characteristic of the "corner drug stores." These retail institutions have served as outlets for prescriptions, as well as for a variety of drug and health-related products, sundries, cosmetics, toiletries and small household items. They have tended to remain relatively small, and have not been integrated with each

other, nor with other components of the health care delivery system.

The independent pharmacy has historically been the major source of prescription services to the American public. This source accounted for approximately 68 percent of prescriptions dispensed to ambulatory patients in 1970 (Table 1). However, there are indications that this type of pharmacy is diminishing in importance as a major source of out-patient prescription services. The independent pharmacy's share of the retail prescription market has steadily declined in recent years, particularly since 1960 (44; 47, p. 62). This decline has coincided with the growth of other types of outlets for prescription services, which appear to be capable of providing drug services more efficiently, and to be more appropriately meeting consumer demands for drug services. Authors have predicted that this trend will continue, that newer, more efficient methods of dispensing are imminent, that the corner drugstore will become obsolete as a source of prescription services, and that the majority of these services will be channeled through some type of institutional setting (16, 24).

Institutional settings, such as hospitals and related health care organizations, have become increasingly prominent as alternate sources of prescription services.

Prescription services are often provided through such settings as an integrated "package" of health care services. In addition to the growing economic threat they pose to the independent pharmacy, large scale retailing also poses a substantial threat. Large scale retailing is most often characterized by horizontally integrated pharmacies under common ownership, referred to as "chain drug stores."

If independent pharmacies are to maintain their market position, it is apparent that they must attempt to neutralize the operational and organizational advantages of other types of prescription service delivery systems. One operational advantage which appears particularly important to the success of large scale retailing is in purchasing.

This study will attempt to investigate the purchasing behavior of independent retail pharmacies for prescription drugs, and will investigate select pharmacy characteristics potentially influencing such behavior.¹ The study represents an attempt to gain a better understanding of the prescription drug purchasing

¹Independent retail pharmacies are defined for the purpose of this study as singularly owned and managed retail pharmacies.

behaviors of independent pharmacies, as well as the reasons for and implications of such behavior. The specific objectives of this study are:

1. to identify and describe the various sources of supply utilized by independent pharmacies in purchasing prescription drugs;
2. to identify and describe the patterns of prescription drug purchase behavior among independent pharmacies from these sources of supply;
3. to investigate patterns of purchasing for certain generically-specified drugs; and
4. to investigate the potential relationships between selected prescription drug purchasing patterns and the following pharmacy characteristics:
 - a) the size of the prescription department,
 - b) the extent of the prescription department manager's educational and practical experience in pharmacy,
 - c) the prescription department manager's perception of the degree of price competition existing within his trading area for prescription services, and
 - d) the goals or objectives of the prescription department buying policy.

CHAPTER II

DEVELOPMENT OF PROBLEM

The growing strength of institutional settings as sources of out-patient prescription services is related to the growth and development of more organized systems for health care delivery. These systems provide varying degrees of horizontal and vertical integration of health care facilities and personnel within the framework of a single organizational structure. Such organizations generally provide a variety of integrated health care services, including pharmacy services, to consumers as an alternative approach to the traditional, fragmented American health care delivery system. In doing so, these organizations provide a growing challenge to more traditional methods of health service delivery.

Hospitals, for example, have emerged as nuclei for many community health centers which provide a variety of out-patient medical services. The provision of out-patient pharmacy services through hospital settings is an example of initial attempts at integrating health care service components. Market data indicate that there has been a steady increase in the use of hospitals as a

source of out-patient prescription services. From 1962 through 1970, for example, the number of out-patient prescriptions dispensed by hospital pharmacies increased from 53.2 to 154.1 million, or an increase in the market share of all out-patient prescriptions from 7.0 to 11.2 percent (47, p. 72; 49, p. 30). The number of hospital pharmacies also increased substantially during this period, from 4,045 in 1960 to 5,312 in 1969, an increase of 20.6 percent (49, p. 29). These indicators point toward the continued growth of hospital pharmacies as a source of out-patient prescription services. A lack of quantitative data concerning the provision of out-patient prescription services through other types of institutional settings prohibits examination of their full impact upon the out-patient prescription market.

Chain drug stores have also increased in importance as a source of out-patient prescription services.² In 1950, there were 3,662 retail pharmacies involving four or more units under common ownership (Table 2). At that time, they represented 7.7 percent of all independent and

²Market data sources generally define "chain drug stores" as four or more retail pharmacies under common ownership, while pharmacies with fewer than four retail outlets are considered "independents." These definitions are applicable to the market data presented, unless otherwise indicated.

chain pharmacies serving out-patients in non-institutional (i.e., non-hospital) settings. By 1970, their numbers had nearly doubled to 6,511, or 12.9 percent of all retail pharmacies. Chain drug stores accounted for 88.1 million prescriptions, or 8.3 percent of all out-patient prescriptions dispensed during 1966, and 139.2 million prescriptions, or 10.6 percent of all out-patient prescriptions dispensed in 1970 (Table 1).

Chain drug stores have shown even greater growth in total pharmacy sales volume.³ According to surveys conducted by American Druggist, their market share has grown from 21.4 percent in 1950 to 24.0 percent in 1960, and to 38.2 percent in 1970 (Table 3). From 1965 through 1970, total pharmacy sales of all chain drug stores increased by 81.2 percent.

Among the chain drug stores, it is the larger chains (those with 11 or more units under common ownership) which have shown the greatest growth. In 1960, chain drug stores operating 11 or more units accounted for 19.3 percent of the total pharmacy sales market, and by 1969, 31.8 percent (45, p. 811-812; 46, p. 735-738).

³The following are the major product categories included by American Druggist in compiling total pharmacy sales: prescription and non-prescription drug products and remedies, cosmetics and toiletries, candy, tobacco, and magazines.

The larger chains also account for the largest and fastest growing segment of the chain drug market in terms of the number of retail chain outlets. In 1965, chain drug stores of ten or more units accounted for 43.1 percent of all chain drug store units of two or more stores (2). By 1970, they accounted for 51.8 percent of all chain drug store outlets (3). Conversely, the number of two and three store chains showed a steady decline during these years, decreasing from 37.6 percent to 31.9 percent of all chain drug store outlets. The number of four to nine chain drug units also declined during this period, but at a much slower rate. These data indicate a trend toward continuing horizontal integration of chain drug store outlets into relatively large multi-unit organizations.

In addition to the chain drug store, other large scale retailing institutions, such as supermarkets, department stores and discount stores have shown substantial growth in the retail market for prescriptions and related drug products, and toiletries during the past few years. From 1966 through 1970, The Discount Merchandiser reported that these three retail institutions accounted for approximately half of all retail sales of non-prescription drugs and toiletries (12, 13, 14). Their share of all out-patient prescriptions dispensed during the same period rose from

6.9 to 10.6 percent, nearly matching the market share of hospital pharmacies (Table 1). In 1970, large scale retailing institutions (including chain drug stores) accounted for 20.8 percent of all out-patient prescriptions dispensed (Table 1).

The impact of the changes cited above upon independent retail pharmacies is shown by the corresponding decline in their numbers and in their share of the prescription and total pharmacy sales markets. For example, from 1960 through 1970, the number of these pharmacies declined from 47,342 to 43,870 (Table 2). Their declining numbers may be the result of a trend to combine pharmacies under common ownership, resulting in reclassification as a chain drug store. It may also be due to the disappearance of the smallest independent pharmacies. Some evidence is available to suggest that the latter is more likely. Annual surveys of the retail drug market conducted by the A. C. Nielson Company have indicated a trend toward decreasing market shares in terms of total pharmacy sales for independent pharmacies categorized as small and medium in size (below 100,000 dollars and below 200,000 dollars in total annual sales, respectively) (40, p. 10). In terms of the number of prescriptions dispensed, their surveys further indicated a trend toward declining market shares for smaller independents, no change among medium sized independents, and

increasing market shares for larger independent pharmacies and chain drug stores (40, p. 21). Data provided by the Lilly Digest⁴ indicated that community pharmacies with very low total sales volumes consistently tended to have lower net profits (33, 34, 35, 37, 38). Further, the majority of the pharmacies who suffered operating losses consistently came from this group. The result has been a decrease in the number of independent pharmacies and in their total market share, but a continuing increase in average pharmacy size during the past two decades, both in terms of prescription and total pharmacy sales volumes (35, p. 52).

Data available also indicate that the prescription department has become increasingly important to community retail pharmacies. Comparative analyses of the business operations of these pharmacies indicated that the prescription department was primarily responsible for the net profit in the typical pharmacy (30, p. 12). During the past twenty years, prescription sales have increased from an average of approximately 19 percent of total sales to over 43 percent of total sales among independent pharmacies (35, p. 52).

⁴The Lilly Digest is a report of an annual, non-random survey of the financial operations of community retail pharmacies who utilize the Lilly Analysis Service.

A major contributing factor to the increasing proportion of prescription to total pharmacy sales appears to be the more rapid intrusion of chain drug stores into the market for other products normally carried by independent pharmacies, than into the retail prescription market. The above data indicate that the provision of prescription services is rapidly becoming the major retail marketing activity of independent pharmacies.

Although there are indications that an increasing number of out-patient prescriptions are being distributed through non-retail, or institutional settings, at present the most formidable competitive threat to the independent pharmacy is from the large-scale retailers, including the chain drug stores. Their rapid growth can generally be attributed to the substitution of horizontal and vertical market cooperation for competition, greater resource availability, and more appropriate resource concentration and allocation. They have also been able to more appropriately identify changing consumer perceptions and behavior, and initiate market strategies calculated to better satisfy consumer demands.

The major marketing strategy contributing most to the rapid growth of large-scale retailers appears to be the offering of lower prices and the establishment of a low price image to consumers. One successful technique

employed by large scale retailers to achieve these ends involves the employment of a low margin-high stock turn operating approach. This technique has been successfully employed in marketing a wide variety of convenience type consumer goods. There is some evidence to indicate that it has also been employed in marketing prescription services. For example, a comparison of annual surveys reported by Chain Store Age with those reported by the Lilly Digest for the years 1963 through 1970 indicated that the average prescription charge in chain drug stores ranged from 32 to 47 cents lower than the average charge among community retail pharmacies represented by the Lilly Digest (2; 3; 38, p. 7). American Druggist and Drug Topics annual surveys have shown similar, but narrower prescription price differentials between independent and chain pharmacies (20; 26; 47, p. 62).

Consumer surveys have indicated that low price and convenience are the most important factors in consumer choice among retail pharmacies for the purchase of prescription as well as non-prescription products and services (22). A national consumer survey by the A. C. Nielsen Company indicated that a majority of the consumers in the study believed that there were differences between the prices charged by independent and chain drug stores (31). The nearly unanimous belief among those who perceived

differences was that chain drug store prices were lower. The survey further indicated the importance of competitive prices to retail pharmacies. In a comparison between independent pharmacies with increasing sales volumes and those with decreasing sales volumes, it was determined that 43 percent of the pharmacies in the former group generally matched the prices of chain drug stores in their trading areas, compared to only 14 percent of the latter group. Moreover, 86 percent of the pharmacies with declining sales volumes generally charged higher prices than did chain drug stores in their trading areas, compared to 50 percent in the other group. The same pattern was true among chain drug stores. These findings suggest that many pharmacies with declining sales volumes owe some of this difficulty to the maintenance of relatively high price levels. It appears that a marketing approach for prescription and related drug products and services based upon a low price appeal has been widely accepted by consumers and is a major factor in the growing success of chain drug stores.

The ability to offer relatively low prices is related to the ability to achieve certain economies associated with size. As pharmacies grow in physical size, in number of outlets, and in prescription and total sales volumes, they have the potential of achieving various

economies in their internal operation. Such operational economies may be realized in managing personnel, promotional activities, purchasing, and inventory.

Larger retailers generally have the potential for achieving more effective and efficient utilization of personnel through functional division of labor. As pharmacies increase in physical size, number of outlets, or sales volume, more personnel are required as operational activities require more total time to perform. However, they may then be assigned specialized tasks more commensurate with their training and ability. In most independent pharmacies, pharmacy owners typically have the responsibility for a wide variety of managerial functions in addition to the prescription dispensing function. They often manage as well as perform functional activities for which they are not specifically trained, such as record keeping, merchandise ordering, personnel management, and sales promotion. As a result, many activities may be ineffectively managed, as well as inefficiently performed. Although it is generally impractical to hire appropriately qualified persons to perform these tasks because non require substantial amounts of time, such persons could potentially perform the tasks in a more efficient manner.

Large scale retailers may also realize economies in advertising and sales promotion which are unavailable to smaller retailers. Because of relatively large trading areas, it is often practical for large scale retailers to use mass media, such as television, radio, and newspapers in the promotion of their products and services. Smaller retailers generally avoid these media because of the costs involved, and because the message is distributed to a region much larger than their effective trading area. In addition, chain type stores are further able to make efficient use of advertising and promotion by using a single message to promote all outlets in the chain simultaneously. Since all outlets share the benefits of such promotion, significant savings in advertising expenditures may be realized.

Large scale retailers may further realize economies in sales promotion through the use of promotion allowances offered by manufacturers. Promotional allowances may take many forms, but can generally be described as any discounts provided to retailers by manufacturers for the purpose of advertising and promoting their products. One such form is a "sharing" agreement between the manufacturer and the retailer, wherein each bears a portion of the advertising costs. In the past, some promotional allowances were offered to certain large scale retailers on an exclusive basis. The Fred Meyer Supreme Court

Decision ruled, however, that promotional discounts fall under the auspices of the Robinson-Patman Act, and must be made available to all retailers on an equal basis (39, p. 904-915). Despite this ruling, promotional discounts still tend to favor the larger retailers, who have more capital available for promotion, who have a wider variety of available media at their disposal, and who can advertise more efficiently. The relatively small advertising budgets of most smaller retailers deter participation in all but a few such promotion plans.

Some efforts have been made to assist smaller retailers in attempting to neutralize these advantages. Cooperative advertising groups of retailers have been formed, usually sponsored by wholesalers, to take advantage of manufacturers' promotional advertising allowances. Since the Fred Meyer Decision in 1968, the sponsorship of such groups by wholesalers has substantially increased. In 1970, a national survey indicated that eight of every ten drug wholesalers sponsored such groups (11). Group members generally retain their name identity, but also are identified as members of the group. Advertisements appear periodically in local newspapers, noting "specials" on specific products available at all member pharmacies. Advertisements specifically identify each participating pharmacy, although the group

name is generally given greater prominence. Products advertised are generally, but not exclusively, those for which promotional discounts are available. The products must be purchased from the sponsoring wholesaler, who collects the promotional discount on behalf of the group. Although this arrangement would appear to neutralize many of the promotional advantages of large scale retailers, it has been only partially successful. Major perceived disadvantages to retailers appear to be a reluctance to concentrate purchases with the sponsoring wholesaler, and a reluctance to relinquish, even partially, name identity in favor of group identity.

Another substantial operating economy available to the large scale retailers has been a differential purchasing advantage. Because the cost of goods comprises approximately 60 percent of the prescription charge, this advantage would appear to be a major one for pharmacies (38, p. 27). Quantity purchasing discounts are available through drug wholesalers, and from pharmaceutical manufacturers on a direct purchasing basis. However, the pricing policies generally employed by pharmaceutical manufacturers allows pharmacies purchasing prescription drugs directly to pay lower prices than retailers who purchase through wholesalers. Although any pharmacy is permitted to purchase on a direct basis, a number of

manufacturers impose direct purchasing restrictions. These restrictions often appear to favor the large pharmacies. In addition, the large pharmacies are able to attain additional purchase discounts by purchasing in large quantities.

It is evident from the foregoing discussion that larger pharmacies have the potential for achieving numerous operational economies. There is conflicting evidence, however, concerning the ability of larger pharmacies to actually achieve some of these economies. A study by Myers using Lilly Digest 1967 pharmacy data failed to show that significant economies of scale existed with respect to prescription department expenses, gross margin, or net profit at the 95 percent confidence level (30). However, further analysis of the data indicated that, at the 90 percent confidence level, there was sufficient evidence to indicate that economies of scale existed with respect to prescription department expenses. A later study by Berki and Hornbrook of formulas for allocating portions of total operating costs to the dispensing function showed that average dispensing costs per prescription were inversely proportional to the number of daily prescriptions dispensed, and to total pharmacy sales volume (4). To the extent that these operational economies have been

achieved by the larger pharmacies, they have contributed to their ability to offer lowered selling prices.

These factors generally appear to have contributed to the success of chain pharmacies and larger scale pharmacies employing a high volume and low margin marketing technique. It is evident that the appeal of low price has become an important patronage motive to a large segment of consumers, and that smaller retailers must initiate efforts to better meet this challenge if they are, at a minimum, to maintain their market position. If they fail to do this, their long range survival as viable economic institutions may be threatened.

The independent pharmacy serves an important function in society by producing prescriptions and facilitating their availability through socially useful services, including geographic convenience, charge account privileges, and long hours of operation. In addition, they generally provide upon request personal counsel and advice regarding health and drug matters. The extent to which independent pharmacies are used as sources of prescription drugs would indicate that these institutions are important to consumers. The demise of the independent pharmacy could result in substantially diminished levels of access to prescription services and to drug and health information for a substantial number

of persons. For these reasons, it appears essential that this type of pharmacy remain a viable source of prescription services, at least until some other type of institution emerges which is capable of providing acceptable service and accessibility levels to these persons.

In order to remain a viable competitive economic institution, it is apparent that independent pharmacies must initiate efforts to neutralize the operating advantages of the larger-scale retailers. However, lowered prescription prices means lowered net profits, unless prescription sales levels increase or operating costs are lowered, or both. In conditions of high price competition, lowered selling prices may only result in a maintenance of present sales levels or market share. Under these conditions, it becomes particularly important that efforts to lower operating costs be initiated.

Several potential areas for reduction of operating costs can be identified in the typical independent pharmacy. The various ancillary services provided to the public may be evaluated from a cost-effectiveness standpoint according to the perceived value to the consumer market being served. The costs of advertising and sales promotional activities may also be decreased by joining retailer or wholesaler sponsored voluntary groups who "pool" promotional allowances made available by

pharmaceutical manufacturers to collectively advertise and promote products and services offered by member firms. Salary and wages, which represent substantial pharmacy operating costs, may potentially be reduced by altering staffing patterns and hours of operation to coincide with peak demand periods, or by initiating efforts to make demand periods more level throughout the day, or week, or by both. Finally, and of major importance, is the potential for minimizing costs of goods purchased. Since the inventory maintained represents the largest single pharmacy investment, and since the cost of goods is the largest single pharmacy operating cost, attention should be directed to these areas whenever possible. Proper purchasing policies and practices can be a major factor in maintaining the overall efficiency of the pharmacy operation, and in maintaining a competitive market position.

There are several means available to independent pharmacies to neutralize the purchasing advantages of chain and larger-scale retailers. One of the most obvious means is to attempt to purchase more from suppliers who offer purchasing discounts. Purchasing discounts may be achieved by careful selection among various sources of supply. The largest discounts can generally be obtained by purchasing on a direct basis from manufacturers

who offer quantity discounts. The traditional pricing structure employed by drug manufacturers in marketing products involves a variety of discounts from a catalog or "list" price. Drug wholesalers receive functional or trade discounts from the list price, and operate on a gross margin of approximately 15 percent in selling to pharmacies (47, p. 56-58). Most drug manufacturers also sell directly to pharmacies at discounts ranging from approximately 5 to 15 percent. In addition to meeting sometimes stringent ordering restrictions, there are other possible disadvantages associated with ordering drug products directly from manufacturers. Pharmacies who purchase directly from manufacturers forego prompt delivery and other potentially useful ancillary services offered by drug wholesalers. Pharmacies must also assume some wholesaling functions, resulting in higher drug acquisition, handling, and carrying costs. However, these disadvantages and additional procurement costs do not appear to outweigh the amount of purchase discounts obtained through direct ordering from drug manufacturers. For example, labor costs involved in handling such orders can be considered negligible if these activities are performed during "slack" or relatively unproductive personnel time periods. The presence of "slack" personnel time periods is generally characteristic of smaller retail pharmacy operations.

Concentrated purchasing with a particular wholesale source of supply may be another means of obtaining purchase discounts, particularly when purchasing on a direct basis from manufacturers is considered undesirable. National surveys of drug wholesalers indicate that increasing numbers are offering additional purchase discounts for concentrated purchasing (11). In 1970, approximately 38 percent offered extra discounts for large quantity purchases, and 36 percent offered extra rebates to customers whose purchases exceeded a specified minimum. There are potential benefits for both wholesalers and retailers from concentrated purchasing. Wholesaler benefits include lower handling costs associated with preparing larger and more predictable orders, greater predictability of orders, and increased sales. Retailer benefits include the availability of additional purchase discounts through larger, concentrated purchases, as well as various ancillary services offered by the wholesaler. These services may include drug ordering and inventory management services, charge account data processing services, clerk salesmanship training, sales promotion counsel and advice, and interior pharmacy layout and design. On the other hand, concentrated purchasing may result in the possibility of foregoing special prices on

selective items from other wholesalers. It would appear, however, that the advantages of concentrated purchasing outweigh this disadvantage.

Another possible means of neutralizing the purchasing advantages of large scale retailers is through voluntary horizontal and vertical cooperation. The objective of such forms of cooperation is to achieve certain advantages of large scale and chain operations, while at the same time preserving the "independence" of members.

The development of voluntary or cooperative organizations is best illustrated in the lines of trade in which retail chain growth has been most substantial, such as the grocery trade. The corporate retail grocery chain emerged around 1900, demonstrated substantial growth in the decade 1920 to 1930 to account for over one-third of all retail grocery sales by 1929, and accounted for nearly half of all retail sales by 1958 (18, p. 115-120). The wholesaler and retailer-sponsored cooperative grocery chain concept developed in the decade 1930 to 1940 as an effort by independent grocery retailers and wholesalers serving them to respond to this competitive situation through horizontal and vertical integration. These organizations have attempted to match the greater efficiencies achieved by grocery chains

through the cooperative administration of various marketing functions, such as product purchasing and distribution, advertising, and merchandising. Their success is indicated by their growth in the retail grocery market. In 1940, they accounted for 46 percent of all independent retail grocery sales, and 29 percent of total retail grocery sales. In 1958, their share had increased to 73 percent of independent retail grocery sales, and 42 percent of total grocery sales, to equal the share of market of grocery chains (18, p. 115-120). By 1964, their share had increased to 50 percent, as compared to 41 percent for grocery chains (10, p. 552). In contrast, the unaffiliated independent grocer has suffered steady declines in market share, and has become relatively unimportant as a retail institution in the grocery trade.

By associating themselves with franchising organizations, wholesale-sponsored voluntary chains, retailer-owned cooperative wholesalers, or informal buying and merchandising groups, it would appear that independent retail pharmacies may similarly attempt to match the various operating economies of larger-scale pharmacy retailers. Through such associations, they can attain greater buying power by "pooling" orders and can centrally organize and administer a number of retailing

activities, such as inventory, routine drug ordering, customer billing, advertising and promotion. While a reduced cost of goods is usually the most important membership advantage offered by voluntary groups, the amount of savings depends on the number of services offered, and on the size and operating efficiency of the voluntary group. Participation in a voluntary or cooperative buying organization is one method by which independent pharmacies may overcome manufacturer-imposed direct order restrictions and obtain substantial purchasing discounts. Advocates of voluntary group activities claim that voluntary or cooperative groups yield increased profits and still allow selling at lower prices. They predict that in the future it will become increasingly necessary for independent pharmacies to join voluntary or cooperative organizations in order to insure their survival in the marketplace (27, 50, 51).

In the field of retail drug distribution, voluntary or cooperative organizations have not experienced particularly rapid growth as they have in other fields, such as grocery. The reasons for this are obscure, but it has been suggested that one major reason is a lack of member cooperation, associated with a reluctance to surrender, even partially, their "self-sufficient" or

"independent" status (50). Another suggested reason is that economic conditions have not yet become sufficiently severe to persuade independent pharmacies to join and support such voluntary programs (51). Although accurate figures are not available, the National Drug Cooperatives Association estimated that in 1967, there were over 46 drug cooperatives in existence, involving over 8,000 pharmacies (51). These groups engage in group purchasing, group advertising and promotion, or both, and differ greatly in the degree of responsibility and authority relinquished to the central organization.

In more recent years, wholesalers have developed several new programs involving integration of the wholesaler with independent retailers, marking what could be the beginning of a new trend toward more voluntary or cooperative organizations in pharmacy. A national survey indicated that approximately half of all drug wholesalers sponsored various types of cooperative groups (11). In addition to providing special group buying and advertising advantages, some systems, most notably Bergen-Brunswig's "Paragon" system and Northwestern Drug Company's "Velocity" system, have utilized electronic data processing in managing a pharmacy's accounts receivables, accounts payables, inventory control, drug stock reordering and other operational functions (21).

These systems involve symbiotic, mutually beneficial working relationships between the wholesaler and retailer. The retailer receives more efficient and more effective management of many business functions in addition to buying and advertising advantages, while the wholesaler benefits from larger and more predictable orders. Wholesalers, as well as retailers, face the prospects of declining revenues if the growth rate of large scale institutions continues in retail drug distribution. It would appear, therefore, that efforts by wholesalers to integrate retail pharmacies into such programs will continue, much as they did in the grocery trade.

The purchasing of drugs for dispensing on generically-specified prescription orders offers another potential area where per unit drug cost savings can be realized, since generically-named drug products generally cost less than drug products identified by brand name. During recent years, there has been a trend toward more prescribing by generic drug name. From 1966 through 1970, for example, the percentage of generic to total prescriptions increased from 6.2 to 9.0. There were 16 generically-named drugs among the 200 most frequently prescribed drugs in 1970 (42).

One of the reasons proposed for the increased rate of prescribing by generic name is a general belief that prescriptions written by generic name are less expensive

to the patient than those prescribed by brand name. The Task Force on Prescription Drugs projected a 5 to 8 percent savings to elderly consumers if drugs were prescribed and dispensed by generic name (48, p. 36). A study by Gumbhir and Rodowskas, involving Ohio pharmacies, indicated that prescriptions written and dispensed by generic name for frequently prescribed drugs were priced significantly lower to the consumer than prescriptions for the same drug written and dispensed by brand name (19). This occurred with five of the seven drugs investigated. The study further indicated that the observed retail price differentials were not dependent on operational characteristics of the pharmacies, but were most probably a function of acquisition cost differentials between brand and generically name drug products. It appears that the careful selection of drugs for dispensing on generically-specified prescriptions can offer pharmacies the potential for reduced prescription drug acquisition costs, reduced consumer prices, or both.

The above discussion has indicated that large scale retailing institutions have the potential for achieving substantial economic advantages in purchasing, and that proper management of the purchasing activity should be an important concern to independent pharmacies. Yet little

is known about the purchasing patterns of independent pharmacies, of the appropriateness of various purchasing practices, or of the factors which may influence them.

A study by Keller in 1966 described pharmacy purchasing behavior from manufacturing and wholesaling sources of supply (23). Keller's study indicated that retailers were most likely to utilize only one wholesaler, located in-state, as a primary source of supply for drug products. He also found that as the total sales volume, the number of prescriptions dispensed, and the ratio of prescription sales to total sales increased, there was a greater likelihood that purchases would be made directly from pharmaceutical manufacturers. The wholesale supplier patronage motives found to be most important to pharmacies included delivery service, courtesy of personnel, and a minimum number of out-of-stock situations. Keller also determined that price, per se, was a relatively unimportant intra-wholesaler patronage motivator, since most retailers perceived all drug wholesalers to offer comparable prices.

A more recent study by Braucher, Kotzan and Dover attempted to assess the economic efficiency of selected pharmacies in purchasing oral prescription drugs in the large or bulk sizes, rather than in the "popular" size (7).

Their study included independent pharmacies who purchased only from recognized wholesalers or directly from pharmaceutical manufacturers. They found that, when carrying costs were considered, it was less economical for the average pharmacy to purchase in the larger sizes.⁵ Their study indicated that the economics of bulk purchasing were dependent upon carrying costs and the rate of inventory turnover. They pointed to the need for further study of the purchasing policies of independent pharmacies, as well as the effect of carrying costs on large purchases, and small purchases retained in inventory for prolonged periods.

The limited amount of information available suggests that there is a need to further study the patterns of prescription drug purchase behavior among independent pharmacies. Assessment of the appropriateness of various prescription drug purchasing behaviors is needed. However, it must be preceded by investigations of the accessibility and use of available sources of supply for prescription drugs. In addition, attempts must be made to begin to explain purchasing practices as they relate to

⁵ Carrying costs were defined as the ratio of total prescription department expenses to average prescription department inventory, and were assumed to vary directly with the dollar value of the inventory. The definition and derivation of carrying costs in this study is subject to question.

the use of various sources of supply. Evaluations can then be made of the impact of various purchasing policies and practices on the reduction of pharmacy operating costs. Determinations of more efficient prescription drug purchasing practices from available sources of supply, particularly as they relate to appropriate inventory management practices, can then be made. Information of this type can enable independent pharmacies to become more efficient and to remain viable as prescription service institutions.

This study will direct specific attention to the use of various sources of supply which offer relatively lower per unit prescription drug costs, particularly as they may relate to the selected pharmacy characteristics. Although other costs may be associated with the use of these sources, they nevertheless represent alternatives to consider in attempting to minimize costs of goods. A more complete description of purchasing behaviors from these sources can provide insight into the problems encountered by independent pharmacies in acquiring prescription drugs, and the level of managerial efficiency exhibited.

It is appropriate that a study of the purchasing practices of independent pharmacies give major consideration to the prescription department. As indicated, the

provision of prescription services to consumers has assumed increasing economic importance as the major income generating department of independent pharmacies, and is the only similar service offering among all pharmacies. Further, while the product line carried in the prescription department remains relatively similar among all pharmacies, other merchandise lines and assortments differ widely, and therefore, cannot be as easily controlled.

CHAPTER III

METHODOLOGY

I. SETTING

The purchasing patterns of a randomly selected sample of independent pharmacies were identified by a personal interview technique using a structured questionnaire. The universe for the study consisted of all independent pharmacies licensed by the Oregon State Board of Pharmacy and located in the Portland metropolitan area. The Portland area was chosen because it is the largest metropolitan area in the state of Oregon, and as such, contains a major share of the pharmacies in the state. Further, this market area appeared to contain a good representation of the evolving retail pharmacy market structure in large metropolitan areas. Chain Store Age reported that chain drug stores (two or more stores under common ownership) accounted for 26.6 percent of all retail pharmacies, and 61.7 percent of total pharmacy sales in the Portland metropolitan area in 1968 (1).

The metropolitan area was used as the geographical boundary in order to include all pharmacies which may serve city residents, even though located outside city

limits. Further, business and residential districts often extend beyond city boundaries, and pharmacies located therein may exert an influence on the marketing of prescription services within city limits. The frame for the study was a list of all Portland area pharmacies. The list of pharmacies was obtained from the Oregon State Board of Pharmacy.

II. SAMPLE DESIGN

A sample size of 50 independent pharmacies was considered the minimum necessary to permit meaningful data categorization and analyses. The initial sample size needed to provide a minimum of 50 pharmacies was determined from the results of a survey of 20 randomly-chosen pharmacies from the sample universe. The results of this preliminary telephone interview helped to determine the approximate proportion of independent total pharmacies in the sample universe. In addition, it helped determine specific aspects of purchasing behavior to be investigated, and provided information useful in the questionnaire construction.

The results of the telephone interviews indicated that 65 percent of the pharmacies within the sample universe were independent pharmacies. It was therefore determined that the sample must contain at least 77

pharmacies from the universe in order to supply a minimum of 50 independent pharmacies. The 77 pharmacies were chosen for study by a probability sampling method using a random number table (5). All hospital pharmacies and other pharmacies not providing services to the general public were eliminated from the sample. From the remaining sample, pharmacies identified as being part of a chain, pharmacies which were uncooperative, and those which had discontinued operations were eliminated. For the purposes of this study, a chain drug store was defined to include two or more pharmacies under common ownership. Additional pharmacies were chosen at random using the same sampling procedure in order to obtain the sample of 50 independent pharmacies.

III. QUESTIONNAIRE

The questionnaire developed is shown in Appendix A. It was pre-tested in five selected pharmacies from the sample universe. The pretest resulted in minor changes in the structuring of the interviews, and in the terminology and ordering of certain questions.

A major part of the questionnaire was concerned with an identification of various sources of supply utilized by sample pharmacies, and an identification of the patterns of purchasing from these sources.

Pharmacies were asked to indicate the major sources of supply from whom they purchased prescription drugs. They were further asked to state the approximate percent of purchases made during the past year on a direct basis from pharmaceutical manufacturers, and from drug wholesalers. Since a pharmacist-manager's ability to accurately recall the proportionate amount of purchases made from various sources of supply has not been established, it was necessary to verify the accuracy of the responses. A reliability check was conducted on a sub-sample of independent pharmacies from the sample universe to determine the accuracy with which respondents stated the percentage of purchases made from each major source of supply. It was found that respondents were quite accurate in estimating the percentage of prescription drug purchases made from each major source of supply (Appendix B).

Information was also sought to indicate the relative amount of prescription drug purchases made from other sources of supply during the past year. This included purchases made from voluntary or cooperative buying organizations.

To identify the purchasing of prescription drugs on a direct basis from pharmaceutical manufacturers, pharmacies were asked to identify some of the manufacturers with whom they maintained direct purchasing

accounts. A list of pharmaceutical manufacturers with whom pharmacies may have maintained purchasing accounts was included in the questionnaire. The list was prepared from a list of the major drug manufacturers of the 200 most frequently prescribed drugs in the United States (43). Pharmacies were also asked to indicate the most often used source for purchases of each manufacturer's prescription drug products. Other questions were asked in an attempt to further describe patterns of purchasing from drug manufacturers, wholesalers, and voluntary or cooperative buying organizations.

Patterns of purchasing for selected generically-named prescription drugs were also investigated. A list of seven common generically prescribed drugs was prepared from a list of the ten most frequently prescribed generically-specified drugs, prepared by the R. A. Gosselin and Company (41). The following generically-specified drugs were included: meprobamate, penicillin G., phenobarbital, prednisone, reserpine, tetracycline and thyroid.

A description of the pharmacy size in terms of sales volume was requested, as well as certain personal characteristics and perceptions of prescription department managers which may be related to purchasing. Questions were also asked concerning the extent of their

formal educational training, and the extent of their experience, in the retail practice of pharmacy.

Pharmacist managers' perceptions concerning competitive environment were measured by asking each to indicate the degree of price competition they believed to exist within what they considered their trading area. A subjective, rather than objective measure of the competitive environment was used because it was assumed that purchasing behavior would more likely to be based on their perceptions of competitive levels, rather than on actual competitive levels. A semantic scale using linguistic quantifiers was constructed to indicate the magnitude of the positive intensity of the perceived degree of price competition. The following terms were used in this scale to describe the relative degree of price competition which may exist within each trading area: "very high," "fairly high," "medium," "fairly low," "very low," and "none." It was assumed that these terms are associated with approximately equal degrees of intensity of meaning, ranging from none to the highest possible intensity.

Finally, the specific objectives of the pharmacy as related to the purchase of prescription drugs were explored. Pharmacy department managers were asked to identify the purchasing policy objectives they considered

most important. The following four objectives, comprising the list used in the interview questionnaire, were determined by the author to be among those most commonly employed by independent retail pharmacies. These were: achieving the lowest possible cost of goods, achieving a high stock turn, achieving the lowest possible number of "stockouts," and maintaining a minimal stock level. It was recognized that the major purchasing goal of all pharmacies should be related to a general inventory management goal, such as the maximization of monetary return on the inventory investment. However, it was felt that daily purchasing activities would be governed by more specific purchasing objectives, such as those identified above, and that purchasing behaviors would more likely be related to these objectives.

IV. DATA COLLECTION

Personal interviews were conducted with the pharmacist responsible for the purchase of prescription products. In all cases, this person was the manager of the prescription department as well as the entire pharmacy. In most cases, this person was also the pharmacy owner. The interviews were conducted between May 17, 1968 and June 20, 1968.

A structured personal interview was conducted. Each respondent was given a copy of the questionnaire and was invited to record his own responses during the course of the interview.

The first question served as a screen to identify any pharmacies of a chain type of ownership. If the pharmacy was so identified, the interview was terminated and the pharmacy was eliminated from the sample.

In the instances where the pharmacist was found to be busy, alternate interview times were arranged. Where no other arrangements could be made, the questionnaire was left with the manager to complete, and a date for its retrieval was arranged. When the questionnaire was retrieved, it was reviewed for pharmacist understanding of the questions asked, and for completeness.

V. ANALYSIS DESIGN

Proportionate distributions of pharmacies by various pharmacy characteristics and source of supply characteristics are used to describe sample pharmacies and their prescription purchasing patterns from various sources of supply. Purchasing patterns identified as dependent variables in the investigation of the potential relationships between prescription drug purchasing patterns and various pharmacy and purchaser characteristics include those which

are associated with the attainment of low drug acquisition costs. These include: (1) the proportionate amount of purchases made directly from manufacturers; (2) the use of informal buying groups; (3) the use of a retailer-sponsored wholesale cooperative as a major wholesale source of supply; and (4) the participation in special wholesaler-sponsored purchasing plans whereby extra discounts are obtained for concentrated purchasing.

Non-parametric statistical tests are employed to explore these potential relationships between prescription drug purchasing patterns and various pharmacy characteristics. The statistical tests employed included the Chi Square test, Fisher's exact probability test, Kruskal-Wallis test, Mann-Whitney U test, and the Spearman's rank correlation coefficient (6, p. 317-319; 32, p. 96-111, 116-127, 184-193, 202-213). Attempts were made to select tests which would provide maximum use of the specificity of the data, thereby providing the potential for more substantive implications from the test results.

VI. LIMITATIONS

The sample size was relatively small for a comprehensive study of independent pharmacy purchasing behaviors. Although adequate for the data analyses performed, a larger sample size would have permitted added discrimination among the variables investigated in the study.

The purchasing patterns investigated were assumed, from observation of the Portland area retail pharmacy market, and from discussion with retail pharmacists, to include all the major sources of supply utilized by independent retail pharmacies in prescription drug purchasing. However, there may have been other purchasing arrangements in existence, or other sources of supply utilized which were not revealed in this investigation.

Attempts to explain specific purchasing patterns involved the examination of potential relationships of purchasing patterns to selected pharmacy characteristics. There are undoubtedly other factors or other pharmacy characteristics potentially influencing prescription drug purchasing behaviors which were not investigated. In the analyses of the potential relationships of pharmacy characteristics to purchasing patterns, there may have been other potential interrelationships between the various pharmacy characteristics which were not recognized

in the statistical analyses performed. Some type of multivariate or factor analyses, noting the contribution of each independent variable to changes in the dependent variable, may have been more appropriate.

The investigation of patterns of purchasing for generically-specified drugs included an investigation of selected manufacturer characteristics as one possible dimension of perceived quality differences. A more complete investigation of perceived quality differences, and of their importance in product selection relative to price differences, could have been made.

The measures utilized in describing some of the pharmacy characteristics investigated may not have been complete or the most appropriate. For example, the length of the pharmacy school program may not have been the best surrogate measure of the formal educational training applicable to retail pharmacy management. The selection of specific prescription drug buying policy objectives listed on the questionnaire may not have been complete. Further, an investigation of the general prescription department buying and inventory management goals of independent pharmacies may also have been useful.

Further investigation could have been made of the perceived and actual effects of various levels of prescription drug retail price competition upon the pharmacy

operation, particularly sales volume. Such an investigation could have been of assistance in explaining the results observed.

The study identified sources of supply offering low prescription drug acquisition costs relative to "routine" wholesale drug purchases, but did not quantitatively identify the extent of purchase discounts available from various sources of supply. Such an investigation was considered more appropriate to a future evaluative study of the pharmacy drug acquisition costs associated with various purchasing alternatives and with the use of various sources of supply.

More information is needed before the findings of this study can be generalized. For example, purchasing patterns may be a function of the availability of various sources of supply. It is not known whether the various sources of supply found in the Portland metropolitan area are typical of those found in other large cities.

CHAPTER IV

RESULTS AND DISCUSSION

I. PHARMACY CHARACTERISTICS

It was necessary to sample 94 pharmacies in the Portland metropolitan area in order to obtain the necessary number of independent pharmacies for the study. Eighty-three of these pharmacies were retail pharmacies, and 57, or 68.7 percent of these 83 pharmacies were identified as independent pharmacies. Twenty-four or 28.9 percent were identified as chain pharmacies, and two had discontinued business. Seven of the independent pharmacies did not wish to participate, leaving 50 independent pharmacies in the sample.

Pharmacies in the sample were described according to selected operational characteristics. The total annual sales of a retail pharmacy is one indicator of the extent to which it serves the effective demand for prescription services and related pharmacy items within the community. Further, it can serve as an indicator of a pharmacy's relative economic position among competitors.

Table 4 shows that the average annual sales volume among sample pharmacies was approximately 146,000 dollars.

Approximately 70 percent of the pharmacies had annual sales ranging from 50,000 to 200,000 dollars, while approximately 8 percent indicated that annual sales were less than 40,000 dollars, and another 8 percent indicated that annual sales were 300,000 dollars or more.

Due to the diverse nature of products and product lines carried in pharmacies, a description and comparison by total annual sales has only limited usefulness. A more meaningful descriptive characteristic is prescription sales. The dispensing of prescriptions is the primary health-related function of pharmacies, and is the one activity common to all pharmacies. Further, prescription sales have historically represented a continually increasing component of total sales among independent pharmacies (35, p. 52). Knowledge of prescription sales also permits comparisons of relative economic position in the prescription market.

Table 5 shows that the annual average prescription sales for all sample pharmacies was 61,000 dollars. About 6 percent of the pharmacies indicated that prescription sales were less than 20,000 dollars, and a similar proportion indicated that annual sales amounted to 100,000 dollars or more.

Another means of describing retail pharmacies is by comparing the relationship of the prescription department

sales to total sales. This relationship indicates the relative importance of the prescription department as a sales-generating component and further should be an indicator of the extent to which managerial attention should be focused upon this sales component.

Table 6 shows the proportion of annual prescription sales to total sales within the pharmacies. The mean proportion of prescription sales to total sales was approximately 42 percent. Thus, it appears that the prescription department is very important income generating department to these pharmacies.

The sales volumes of sample pharmacies in the Portland area was compared to a national sample of independent retail pharmacies conducted by the American Druggist (20). The comparison indicated that the average total annual sales, as well as annual prescription sales volumes of the sample pharmacies in the Portland metropolitan area was about 10 percent lower than for the pharmacies represented in the American Druggist survey. The average proportion of prescription sales to total sales was about the same for each group. Although a slightly different complement of pharmacies were included in the survey, the comparison would appear to indicate that independent pharmacies in the Portland metropolitan area are smaller in terms of total annual prescription and

total pharmacy sales than the national average for independent pharmacies, but had about the same proportion of prescription to total sales.⁶ However, it must be remembered that the categorization of independent pharmacies as large or small is relative to their position among other independent pharmacies. Independent pharmacies as a group are characteristically categorized as small scale retailers.

II. SOURCES OF SUPPLY

There were 15 direct sources of supply for prescription drugs located in the immediate area. Of these, five may be described as "major" or nationally known large manufacturers of prescription drugs, who market products primarily by brand names. The others may be described as "minor," or lesser-known manufacturers.

There were also present several indirect or wholesale sources of prescription drugs. All three primary types of drug wholesalers exist in this area as sources of supply for prescription drugs. Two "full-service" drug wholesalers were located in the Portland metropolitan area. Wholesalers of this type have typically been the chief source of supply for pharmacies (8, p. 18). They generally

⁶American Druggist defines independent pharmacies to include two and three units under common ownership.

stock a wide variety of product lines, and usually buy from manufacturers in comparatively large lots. In addition to large merchandise assortments, they offer retailers a wide variety of services, which may include free delivery, new product information, promotion planning and advice, liberal credit, and returned goods policies, assistance with financial analysis and management, and sales training sessions for pharmacy personnel. These wholesalers are generally not noted for offering frequent or substantial price concessions.

There was only one "specialty line" drug wholesaler located in the Portland metropolitan area. It was an organization with several branch warehouses located along the West Coast, specializing in the distribution of prescription drug products. Wholesalers of this type perform many marketing services similar to those of full-line wholesalers (9, p. 18). However, by attempting to limit width of lines carried to only the faster-selling products, relatively lower selling costs per unit are possible. For this reason, specialty wholesalers carrying primarily prescription drugs have been successful in recent years, and would appear to offer a purchasing advantage.

A third type of wholesaler is the cooperative, mutual, or voluntary wholesaler. Generally, wholesale organizations of this type are created and owned

exclusively by a group of retailers seeking special purchase price advantages available through group buying (17, p. 66). A cooperative wholesaler may range in size from a very small warehousing operation to a large operation employing field salesmen to service member accounts. When buying through most cooperatives, the retailer typically pays each week for merchandise purchased the previous week. Thus, the retailer's capital investment in a wholesale cooperative is that amount adequate to cover his purchases for one week. These wholesale organizations would appear to offer certain purchasing advantages to retailers.

There was one drug wholesaler of this type located in the Portland metropolitan area. It was a retailer-owned wholesale cooperative having over 90 members in the Portland metropolitan area, and having a total of approximately 400 members located throughout the state of Oregon (28). The cooperative may be simply described as a commonly-owned wholesale source of supply; other characteristics of horizontal integration of member pharmacies were absent. It carried nearly a full line of both prescription and non-prescription drug products, and offered many of the same services as other wholesalers in the area. A lifetime membership fee of 100 dollars was charged, and membership was open to any retail pharmacy

in Oregon. Profits were dispersed by means of an annual patronage dividend to members, with annual dividends generally amounting to slightly less than 3 percent of purchases (28).

III. PATTERNS OF PURCHASING FROM PHARMACEUTICAL MANUFACTURERS

Forty-nine of the pharmacies purchased some prescription drugs on a direct basis from manufacturers. An average of 40.2 percent of all prescription drug purchases were made directly from pharmaceutical manufacturers and the remainder were made from drug wholesalers. Table 7 shows the distribution of pharmacies by percentage of purchases made directly from pharmaceutical manufacturers. More than half of the pharmacies purchased between 35 and 55 percent of their prescription drugs directly from manufacturers. Four percent indicated that less than 15 percent of purchases were made directly from manufacturers, and 6 percent indicated that over 80 percent of the purchases were made from this source.

A further investigation was made of the manufacturers utilized in direct purchasing. Table 8 indicates the number and percentage of pharmacies maintaining purchasing accounts with a select list of the largest

manufacturers. Eighty percent of the pharmacies had accounts with eight of the 13 manufacturers. The results indicated that direct purchasing accounts with a substantial number of the largest pharmaceutical manufacturers are accessible to most pharmacies as a means of obtaining purchase discounts.

Certain attributes of manufacturers may exist which tend to encourage or discourage the amount of retailer-direct purchasing. Some of these characteristics include: his reputation for "reliable" products and "fair" dealings, the width of his product line, the amount of the direct purchasing discount, and direct purchase order restrictions. The latter characteristic appeared to be particularly important in that it could substantially hinder the extent to which manufacturers are utilized as sources of supply.

Manufacturers differ widely in the extent to which they attempt to encourage or discourage direct purchasing through ordering restrictions. Some permit purchasing only by drug wholesalers, while others openly encourage pharmacy purchasing by offering discounts from established or "list" prices. The most common purchase order restriction imposed by manufacturers are minimum dollar purchase order restrictions. The relative ease with which a pharmacy can meet these restrictions appears to be an important factor in determining whether or not it

will utilize this source of supply.

A further investigation of manufacturers indicated that an almost equal number had minimum order requirements of 30 dollars or less and over 50 dollars, while none had minimal order requirements between these amounts. The distribution resulted in a dichotomy for distinguishing between ordering restrictions likely to be restrictive to pharmacy purchasing, and those which would not. As a result, manufacturers were categorized as having "low" minimum purchase order requirements if they amounted to 50 dollars or less, and "high" purchase requirements if the amount was over 50 dollars. A comparison was made of the number of pharmacies in each category maintaining direct purchasing accounts.

Table 8 shows that substantially more pharmacies maintained direct purchase accounts with manufacturers who had "low" minimum dollar purchase requirements. Over 80 percent of the pharmacies maintained purchasing accounts with each manufacturer in this group. In contrast, an average of 36 percent of all pharmacies maintained direct purchasing accounts with manufacturers who had "high" minimum dollar purchase requirements. These results suggest that high minimum purchase order requirements do deter direct purchasing by independent pharmacies.

A further analysis was made to determine if the amount of pharmacy sales was related to the maintenance

of direct purchasing accounts with manufacturers in each category. The mean prescription and total sales volumes of pharmacies maintaining purchase accounts with each manufacturer is also shown in Table 8. It was expected that the pharmacies with larger prescription sales would find minimum purchase order requirements less restrictive, and would, therefore, be the ones most likely to maintain accounts with manufacturers in the high minimum dollar purchase requirement category. For the statistical analysis, pharmacies maintaining direct purchase accounts were ranked according to annual prescription sales. Pharmacy rankings within each purchase order category were then compared using the Mann-Whitney U statistical test. The test results indicated that pharmacies maintaining purchase accounts with manufacturers in the "high" minimum purchase order category were significantly larger ($\alpha = 0.05$) in terms of prescription sales. Similar results were obtained when pharmacies were ranked according to total annual pharmacy sales. These findings suggest that direct purchase accounts with manufacturers who have relatively high minimum purchase order requirements are most accessible to the larger pharmacies.

The major source of supply for prescription drug products of the selected manufacturers was also identified. The results indicated that over 70 percent of the pharmacies who maintained accounts with manufacturers used

their accounts to make a majority of their purchases. These findings suggest that independent pharmacies generally attempt to obtain purchasing advantages through direct purchasing from pharmaceutical manufacturers.

IV. PATTERNS OF PURCHASING FROM DRUG WHOLESALERS

Concentration of purchases was discussed as another means of attaining purchase discounts and other preferential advantages from wholesale suppliers. The data were analysed to determine if there was a tendency among pharmacies to concentrate wholesale purchases with a single supplier.

The number of different wholesale sources utilized in prescription drug purchasing during the past year was identified. Table 9 shows that 92 percent of the pharmacies purchased prescription drugs from at least three of the four locally available wholesale sources of supply.

Although the pharmacies indicated that they purchased prescription drugs from several different wholesale sources, nearly all indicated that they utilized one source for the majority of their prescription drug purchases from wholesalers during the past year. Ninety percent of the pharmacies indicated that more than half of their prescription drug purchases from wholesalers were made from a single supplier. The results indicate a

strong tendency for pharmacies to concentrate prescription drug purchases with a single drug wholesaler.

Table 10 shows that most prescription drug purchases were made from a cooperative type of wholesaler. A major reason for the high rate of utilization of the cooperative wholesaler may have been the unique additional purchasing discount offered to cooperative members in the form of a year-end patronage dividend. In addition to the patronage dividend, the sense of ownership of the cooperative and the recognition of its dependency on members' support and patronage for success may have contributed to the high rate of utilization. In addition, the membership fee carries with it a financial commitment, which in itself may have provided an incentive to utilize the cooperative to justify the financial investment.

The specialty wholesaler was not reported by any of the pharmacies as the wholesale source from whom most prescription drugs were purchased. One possible explanation may be that this wholesaler was fairly new to this market, having become established in 1965, and may not have reached its full growth potential. Pharmacies may have been reluctant to change traditional buying patterns. Pharmacies may also have wished to concentrate their purchases with a wholesaler from whom they could obtain most

of the needed prescription and non-prescription items. The specialty-line wholesaler would not have been able to serve this need. However, if the specialty line wholesaler can realize operational economies through restrictions in its product line and thereby offer lower prices, it would appear that it will indeed become a more important wholesale source of supply to this market.

Most of the pharmacies who indicated that the wholesale cooperative was the most often used source for prescription products also indicated that a full-line, full-service wholesaler was utilized for the second highest amount of prescription drug purchases during the study year (Table 10). One explanation for the preference of a full-line, full-service wholesaler as a secondary source of supply is a perceived need to maintain access to a wholesaler who can supply a wide range of products in the event that they are needed, such as when the primary source does not stock or is temporarily out of a needed item. Also, pharmacies may have maintained active accounts with a full-service wholesaler in order to utilize available ancillary services. Among pharmacies indicating the use of a full-line, full-service wholesaler for the majority of prescription drug

purchases from wholesalers, there was no discernible pattern to their secondary choices.

The results have indicated that a substantial amount of prescription drug purchasing was done through the retailer-sponsored wholesale cooperative. This suggests that the potential of obtaining lower prescription drug acquisition costs was a major factor in selecting among wholesale sources of supply, and that this type of cooperative buying group was well accepted by independent pharmacies. However, the wholesale cooperative appears to offer minimal advantages in purchasing relative to routine purchasing from other wholesale sources of supply.

The extent of pharmacy participation in special purchase plans offered by wholesalers whereby extra discounts are obtained for concentrated purchases was also investigated. The results indicated that slightly less than half of the pharmacies (46.0 percent) participated in such plans. Thus, it appears that this purchasing method is well accepted by pharmacies as a means of obtaining relatively low drug acquisition costs from wholesale sources of supply.

V. PATTERNS OF PURCHASING FROM
OTHER COOPERATIVE BUYING
ORGANIZATIONS

Fifty-six percent of the pharmacies indicated that they combined their purchases of prescription drugs with other pharmacies through informal buying groups. The results also indicated that the size of the groups was small, averaging 3.0 pharmacy members in each group. The average frequency for placement of group orders with manufacturers was once every five to six weeks. No group was identified by a name or symbol, and no group collectively owned a warehouse or similar storage facility for merchandise purchased for group members. It appeared that the extent of utilization of informal group purchasing as a source of supply for prescription drug purchases is minimal among independent pharmacies, although a substantial number are associated with such groups. Discussions with managers indicated that most groups function very informally. Each group member may, for example, have purchasing accounts with different prescription drug manufacturers. When a pharmacy is ready to place an order with a manufacturer, he generally calls the other pharmacies in his group to inquire as to whether or not they wish to add any items to his order. When the order arrives, each pharmacy

participating in the combined order is so informed. A slight variation may sometimes occur in this procedure. One or more pharmacies may, on occasion, merely purchase items from the stock of another pharmacy having a direct purchasing account with a specific manufacturer. The pharmacy with the direct account usually begins by selling only his "extra" inventory stock to other pharmacies. In time, however, he may begin planning for the additional demand generated by other pharmacies, and may begin routinely placing larger orders with manufacturers. This arrangement not only facilitates the attainment of lower per unit drug costs by the participating pharmacies, but also helps the pharmacy with the direct purchasing account to maintain his account, particularly when high minimum purchase order requirements must be met.

The description of the informal buying groups existing in the Portland area and the extent of their use indicated that a substantial number of pharmacies have access to purchasing through this source, but it does not appear to be a major source utilized.

Franchises of retail pharmacies were found to exist in the Portland area retail pharmacy market, as exemplified by the existence of Rexall franchise outlets. However, no such structure existed primarily for the

purpose of supplying prescription drugs. Despite the development of other types of cooperative organizations in other metropolitan areas, such as the more highly integrated voluntary chains sponsored by retailers or wholesalers, no other types of cooperative organizations were found to exist in this market (9).

VI. PATTERNS OF PURCHASING FOR GENERICALLY-SPECIFIED DRUGS

The dispensing of generically-specified prescription drugs represents an area where substantial drug acquisition cost savings may be realized, because the pharmacist in these cases is permitted to select the manufacturer's product to be dispensed. Many factors may influence a pharmacy manager's decision regarding which drugs to have in stock for use when generically-specified prescription drug orders occur. The potential relationship of some of these factors to patterns of generically-specified prescription drug purchasing was explored.

The following factors were expected to be important to pharmacies when purchasing generically-specified prescription drugs: the relative drug cost per unit, the perceived quality of the drug, and the relative location of the manufacturer.

The relative cost per unit of a generically-specified prescription drug was expected to be an important factor in determining the sources of supply to be utilized because of the unique opportunity for pharmacies to reduce prescription drug costs without necessarily purchasing in larger quantities or meeting manufacturers' ordering restrictions. Pharmacy managers, however, are not likely to make purchasing decisions based only on cost per unit, but on the relationship between the perceived quality of a product and its cost per unit. Their selections would be expected to differ based upon the importance attached to each criteria.

Whereas cost information is easily obtainable, it is frequently difficult for pharmacists to make objective decisions regarding the perceived quality of different products. Sources of information concerning quality differences among prescription drug products are relatively scarce. Quality control standards have historically not been sufficiently specific or complete to insure similar therapeutic efficacy levels among products. The standards usually include strength and purity requirements for products, but lack specifications concerning the manufacture of the dose form, the inert ingredients included, and dissolution and

absorption rates. As a result, it may be assumed that most pharmacists arrive at perceptions of quality intuitively, based on their familiarity with the manufacturer, and from past experience in handling his product line.

Perceptions regarding the quality of a drug product may be influenced by the perceived "image" of the manufacturer. Characteristics of a drug manufacturer constituting its "image" to retail pharmacists are assumed to include relative size, market emphasis on branded or generically named products, and extent of quality control and new drug research activities. These characteristics are often used to group manufacturers as either "major" or "minor" pharmaceutical manufacturers. In general, "major" pharmaceutical manufacturers are considered to be those having relatively high sales volumes, marketing products designated by brand name, and engaging in substantial research activities. "Minor" pharmaceutical manufacturers, conversely, are considered to be those having relatively low sales volumes, marketing products designated primarily by generic name, and engaging in little or no research activities. It was expected that pharmacists would perceive the widest difference in quality between drugs produced by "major" and "minor" pharmaceutical manufacturers, with "major"

pharmaceutical manufacturers being perceived as producing prescription products of a higher quality.

Based on this possible relationship between cost and quality factors, a set of assumptions can be made concerning prescription department managers' purchasing behavior. Given that the quality of each manufacturer's product is perceived to be above a certain minimum quality level, if the relative cost differential is greater than the relative quality differential, a manager will purchase the lower cost product. If the relative quality difference is perceived to be much greater than the relative cost difference, the perceived higher quality product will be purchased. Thus, it is expected that when costs per unit among similar prescription drug products are nearly equal, managers will make purchasing decisions based on the perceived "image" of the manufacturer.

The location of the pharmaceutical manufacturer may also influence a pharmacy manager's choice of which manufacturer's product to purchase. A manager is likely to be more familiar with local manufacturers of generically-specified drugs and, for this reason, may be more inclined to purchase their products. In addition, if purchases are made on a direct basis, local manufacturers may offer other services not available from more distant

manufacturers, such as more rapid delivery. It is expected that the distance factor would be of greatest importance with considering purchasing from "minor" manufacturers, because of the greater perceived element of risk involved when purchasing from a distant, relatively unknown "minor" manufacturer.

Characteristics of manufacturers were identified which would correspond with factors identified above as potentially influencing a pharmacy manager's choice of manufacturer for generic name prescription drug purchasing. Manufacturers identified during the interviews were grouped according to the following characteristics: cost per unit to the pharmacy, market emphasis on generic or brand name products, membership in Pharmaceutical Manufacturers' Association, and location.

The relative cost of each manufacturer's generically-specified drug was categorized as being "low" or "high". Another criterion considered was the amount saved by purchasing the lower cost product, and vice versa. For each generically-specified drug product, a cost range was determined, which included prescription drug costs of all manufacturers identified in the sample. The cost range for each generically-specified drug was then categorized as being either "wide" or "narrow."

Pharmaceutical manufacturers were described according to whether they were "major" or "minor" manufacturers. In this context, their market emphasis on either brand or generically-named products was noted, as well as their membership status in the Pharmaceutical Manufacturers' Association. In general, such membership implies relatively large prescription drug sales, marketing emphasis upon brand name, and substantial involvement in new drug research activities.

The location of manufacturers was described relative to the Portland metropolitan area. If a pharmaceutical manufacturing plant or warehouse was located in the Portland metropolitan area, the manufacturer was categorized as "local"; if not, it was categorized as "distant."

The results, shown in Table 11, suggest that cost per unit is an important factor in generic drug purchasing. More than 70 percent of the prescription department managers indicated that they purchased low cost products, with but one exception. This tendency held true regardless of whether there was a relatively "wide" or "narrow" price range among manufacturers' prescription drug products. Thus, it appears that either pharmacy managers perceive little quality

differences among manufacturers' products, or that they are primarily interested in dispensing low-cost products, or both. Further analyses indicated no tendency to purchase prescription drugs from manufacturers who were members or non-members of the Pharmaceutical Manufacturers' Association (Table 12). Similar patterns were noted when manufacturers were categorized according to market emphasis on brand or generically-named products.

Pharmacies showed no tendency to purchase from either local or distant manufacturers when purchasing generically-specified drugs (Table 13). However, a definite pattern did appear in the case of purchasing from "minor" manufacturers. The manufacturers used were located primarily in the Portland metropolitan area (Table 14). The manufacturer's location did appear to be a factor related to patterns of purchasing for generically-specified drugs from "minor" manufacturers. These results suggested that both convenience and manufacturer familiarity were important factors in selecting among "minor" manufacturers for the purchase of generically-specified prescription drug products.

Pharmacy managers were asked to indicate the major source of supply (manufacturer or wholesaler) utilized

most often when purchasing each generically-specified drug. Table 15 shows no clear pattern of purchasing from either source. Further analysis indicated, however, that when purchasing from "minor" manufacturers, there was a tendency to utilize a wholesaler as the major source of supply. Approximately 65 percent of all pharmacies identified the wholesaler as the major source of supply for generically-specified prescription drug products produced by "minor" manufacturers (Table 16).

The findings indicate that when generically-specified prescription drugs are purchased from "minor" manufacturers, they tend to be purchased from wholesalers, although the manufacturers selected are usually located in the Portland metropolitan area. The available selection of "minor" manufacturers' products may be limited, however, by the selection of "minor" manufacturers' products carried by the wholesaler.

VII. RELATIONSHIP OF PURCHASING PATTERNS TO SELECTED PHARMACY CHARACTERISTICS

Investigations were made to determine the nature of the relationships between selected pharmacy characteristics and selected prescription drug purchasing patterns generally associated with relatively low per

unit drug costs. Each pharmacy characteristic investigated is identified below under a separate heading. The relationship of each to the following purchasing patterns was investigated:

- (1) The proportionate amount of purchases made directly from manufacturers.
- (2) The use of informal buying groups.
- (3) The use of a retailer-sponsored cooperative as the major wholesale source of supply.
- (4) The participation in special wholesaler-sponsored purchasing plans whereby extra discounts are obtained for concentrated purchasing.

Prescription Department Sales

The relationship of the percentage of prescription drug purchases made directly from manufacturers to the pharmacy prescription sales was initially examined. It was expected that a direct relationship would exist. As pharmacies become larger in terms of prescription sales, manufacturers' ordering restrictions would be expected to become less effective barriers to purchasing, facilitating more direct purchasing by the larger pharmacies seeking to obtain purchase economies through this source.

Pharmacies were ranked in order of prescription sales and by the percentage of prescription drug purchases made directly from pharmaceutical manufacturers.

A Spearman's rank correlation coefficient of 0.335 indicated that the rankings were similar and that a significant relationship existed ($\alpha = 0.01$). The findings suggest that as prescription sales increase, relatively more prescription drug purchases are made directly from manufacturers. This corresponds to similar findings reported by Keller in 1966 among retail pharmacies in Mississippi (23). Thus, it appeared that the ability to purchase directly from manufacturers is related to the extent of prescription sales.

The relationship between prescription sales and other patterns of purchasing was also investigated. For this purpose, pharmacies were categorized into two groups based upon their annual prescription sales. The "low" prescription sales category consisted of pharmacies with annual prescription sales of under 60,000 dollars, while the "high" prescription sales group represented pharmacies with annual prescription sales of 60,000 dollars or over. It was expected that pharmacies with lower prescription sales would utilize informal buying groups to obtain lower per unit prescription drug costs to a greater extent than would pharmacies with higher prescription sales, due to the relative inaccessibility of direct purchasing to these pharmacies.

A comparison of the number and percentage of pharmacies in each group who participated in informal buying groups showed only minor differences (Table 17). About half of the pharmacies in each group indicated that they had participated in informal buying groups for the purpose of purchasing prescription drugs. It appeared that participation in informal buying groups was not related to prescription sales. The results of a Chi-Square test indicated that the two groups did not differ significantly with respect to participation in informal buying groups. The findings indicate that pharmacies with relatively lower prescription sales do not utilize informal group purchasing to any greater extent than do pharmacies with higher prescription sales.

The number and percentage of pharmacies indicating that a retailer-sponsored cooperative was the wholesale source most often used for prescription drug purchasing was also determined for each prescription sales category. The results in Table 18 show that two-thirds of the pharmacies in the "low" prescription sales category, and 84.0 percent of the pharmacies in the "high" prescription sales category indicated that the highest dollar amount of wholesale expenditures for prescription drugs were made from this source. The results of a Chi-Square test indicated that the two groups did not differ

significantly with respect to the number of pharmacies in each group who identified this source. The findings indicated that both groups use the retailer-sponsored wholesale cooperative to a considerable extent, but that there is no statistically significant relationship between the extent of its use as a major wholesale source of supply and pharmacy prescription sales.

The relationship between pharmacy prescription sales and pharmacy participation in special wholesaler-sponsored purchasing plans whereby extra discounts may be obtained for concentrated purchases was also investigated. Since the discounts available under most plans are related to the quantity of the orders placed, it was expected that pharmacies with higher prescription sales would participate in such plans more often. The number of pharmacies in each sales group who participated in such plans was identified, and is shown in Table 19. The results indicated that 40.0 percent of the pharmacies in the "high" prescription sales group participated in such plans, compared to 16.7 percent in the "low" prescription sales group. The results of a Chi-Square test indicated a significant difference (one-tailed, $\alpha = 0.05$). These findings confirmed expectations that pharmacies with relatively high prescription sales made significantly greater use of special purchase plans when purchasing from wholesalers.

Prescription Department
Manager Characteristics

An investigation was made of the potential relationships between sources of supply utilized in prescription drug purchasing and selected characteristics and perceptions of the prescription department manager. Two personal characteristics of pharmacist-managers perceived to be related to exhibited prescription drug purchasing patterns were the nature and extent of their experience in retail pharmacy practice, and their formal educational training.

The extent of a prescription department manager's experience in retail pharmacy practice was recognized as being a pharmacy characteristic which may be related to his prescription drug purchasing patterns. As he acquires more managerial experience, it was expected that certain of his behavioral patterns, including purchasing patterns, would change. A greater tendency to utilize sources of supply potentially providing lower acquisition costs of goods was expected to be exhibited as the years of experience increases. The greatest differences in purchasing patterns were expected between "experienced" and "inexperienced" pharmacist-managers. Five years was considered a maximum amount of time for pharmacists to attain this experience. The distribution of prescription department managers by

years of retail pharmacy practice is shown in Table 20. The average number of years' experience was 21.4 years. Twenty-six percent had 30 years' experience or more, while only 6 percent had less than five years' experience. Because of the relatively few number of "inexperienced" pharmacist-managers, no further analyses were undertaken.

The education of pharmacy managers was investigated to determine if purchasing behavior might reflect differences in the amount of formal managerial training received. Although the nature and extent of pharmacy school training in management differs among pharmacy schools, the number of courses available in this area have generally increased. The expansion of pharmacy school curricula has been largely responsible for this increase. Thus, it was felt that the length of the pharmacy school program would be a gross indicator of the extent of his formal training in pharmacy management. Table 21 shows that 8.0 percent of the pharmacist-managers had graduated from a three-year program, 76.0 percent from a four-year program, and 16.0 percent from a five-year program. No further analyses were undertaken on the basis of the distribution and apparent lack of discrimination exhibited by the pattern of responses.

Perceived Degree of Price Competition

The perceptions of pharmacy managers concerning the amount of prescription price competition existing in their trading areas was explored, and the relationship of these perceptions to sources of supply utilized in prescription drug purchasing was investigated. Table 22 shows that over half of the respondents perceived "fairly high" to "very high" levels of prescription price competition within their trading areas, while only 16.0 percent felt that the level was low or non-existent. The median perceived degree of prescription price competition corresponded to the "fairly high" category.

The perceived amount of prescription price competition existing within a trading area was expected to have an impact on pharmacy operations. There is some evidence to indicate that this is the case. Analysis of Lilly Digest 1968 operational data indicated that as the amount of market competition increased in intensity, pharmacy expenses increased, while gross margins and net profits decreased as a percentage of total sales (36, p. 6). It was therefore expected that pharmacy managers perceiving higher degrees of price competition would be more motivated to initiate efforts to protect net profit ratios and to at least maintain

or, if possible, lower operating expenses. They could also be expected to purchase relatively more prescription drugs from suppliers potentially offering lower acquisition costs of goods, as one means of attaining lower operating costs.

In order to control for the previously established relationship between prescription sales and sources of supply utilized, pharmacies were again categorized into two groups, based upon "low" or "high" prescription sales. Pharmacies within each group were further grouped into three categories, based upon the perceived degree of price competition. The "high" level of price competition category represented the descriptive terms "very high" and "fairly high," the "medium" category represented the descriptive term, "medium," and the "low or none" category represented the terms, "fairly low," "very low," and "none." Pharmacies in the three categories were ranked according to the proportionate amount of prescription drug purchases made directly from pharmaceutical manufacturers, and the rankings were statistically compared using the Kruskal-Wallis statistical test. For each prescription sales group, the test results indicated that there was not sufficient evidence to indicate that the pharmacy rankings differed significantly

according to the perceived degree of prescription price competition.

Investigation was also conducted to determine if the use of informal buying groups for purchasing prescription drugs was related to perceptions of price competition. In order to provide sufficient sample size for statistical analysis, the "low" and "medium" degree of price competition categories were combined into a category labeled "not high." Table 23 shows about the same level of participation in such buying groups among pharmacies in each category. The Fisher exact probability test indicated that the extent of use of informal buying groups did not differ significantly according to whether or not there were high perceived degrees of prescription price competition existing within pharmacy trading areas.

The relationship of pharmacist perceptions of the degree of prescription price competition to the use of a retailer-sponsored cooperative as a major wholesale source of supply was also investigated. The results indicated that, among pharmacies with "low" prescription sales, relatively more pharmacies who perceived "high" degrees of price competition utilized the cooperative as the major wholesale source, while among pharmacies with "high" prescription sales, just

the opposite was true (Table 24). The Fisher exact probability test results indicated that, for either prescription sales category, there was insufficient evidence to suggest that the extent of use of a retailer-sponsored cooperative as a major wholesale source of supply differed according to perceptions of prescription price competition as being "high" or "not high."

Finally, the relationship of pharmacist perceptions of the degree of prescription price competition to pharmacy participation in special wholesaler-sponsored purchase plans to obtain purchase discounts was investigated. The results, shown in Table 25, indicated that among pharmacies with "low" and "high" prescription sales, a slightly higher proportion of those who perceived "high" degrees of prescription price competition participated in these purchase plans. However, the Fisher exact probability test results indicated that there was not sufficient evidence to indicate that these differences were statistically significant.

Buying Policy Objectives

Previous discussion has indicated that the cost of goods generates the largest single pharmacy cost and, further, is an area where cost reductions can often be

achieved. Because of its economic importance to the firm, one might expect that a substantial amount of managerial attention would be directed to this area. Retail pharmacies would be expected to have developed objectives for purchasing and to have developed practices consistent with these objectives.

An investigation was made to identify the specific objectives considered by independent pharmacies to be most important in prescription drug purchasing, and to determine if purchasing behaviors were consistent with these objectives. Pharmacy managers most frequently indicated that "achieving the lowest possible cost of goods" was the most important purchasing objective (Table 26). The next most frequently identified objectives, in descending order, were: "achieving the lowest possible number of stockouts," "achieving a high stock turn," and "maintaining a minimal stock level."

An analysis indicated that although the attainment of low prescription drug costs was a major concern of the pharmacies with lower prescription sales, this was not the case with the pharmacies having higher prescription sales (Table 26). Pharmacies with "high" prescription sales most frequently indicated that "achieving the lowest possible number of stockouts" was their most

important objective in purchasing, followed by "achieving the lowest possible cost of goods." Among pharmacies with relatively "low" prescription sales, the second most frequently stated objective was "achieving a high stock turn." Thus, the prescription department purchasing objectives appeared different among pharmacies according to the extent of prescription sales.

Investigations were conducted to determine if any relationships existed between the most important prescription drug purchasing objectives and selected patterns of purchasing prescription drugs. If pharmacies attempted to achieve stated purchasing objectives, purchasing patterns should have been consistent with objectives indicated as being most important. For example, pharmacies whose most important objective was to attain the lowest possible cost of prescription drugs would be expected to participate more in direct purchasing from manufacturers, in voluntary or cooperative buying groups, and in special purchasing discount plans offered by wholesalers, relative to other pharmacies. Conversely, pharmacies whose most important purchasing goal was to maintain a high stock turn or maintain a minimal stock level, for example, would be expected to more extensively utilize wholesale sources of supply.

Pharmacies were categorized according to whether or not they identified "achieving the lowest possible cost of goods" as the most important purchasing objective. A control was again introduced on prescription sales by initially categorizing pharmacies according to "low" or "high" prescription sales. The mean percentage of prescription drug purchases made directly from manufacturers among pharmacies in each category was determined, and is shown in Table 27. The results indicated that in both the "low" and "high" prescription sales groups, the proportionate amount of purchases made directly from manufacturers was somewhat higher among pharmacies indicating that "achieving a low cost of goods" was their most important purchasing goal. Pharmacies in each purchasing objective category were ranked according to the percentage of prescription drug purchases made directly from manufacturers. The rankings were computed using the Mann-Whitney U statistical test. The test results indicated that the rankings of pharmacies within the "low" prescription sales category did not differ significantly according to whether or not "achieving the lowest possible cost of goods" was indicated as being the most important purchasing objective. No significant differences were found when the statistical test was repeated for pharmacies

with "high" prescription sales. Thus, the use of manufacturers as direct sources of supply does not appear to be related to the selection of "achieving the lowest possible cost of goods" as the major purchasing objective.

Similar analyses were conducted to determine if pharmacies whose most important buying objective was "achieving the lowest possible cost of goods" differed significantly from others with respect to the number participating in informal group purchasing, the number utilizing a retailer-sponsored cooperative as the major wholesale source of supply, and the number participating in special wholesaler-offered purchasing plans whereby extra discounts are received for concentrated purchases of prescription drugs. The results indicated that the proportionate number of pharmacies in each category indicating that they utilized informal groups for prescription drug purchasing showed little variation, ranging from approximately 38 to 44 percent among pharmacies with "low" prescription sales, and from approximately 38 to 53 percent among pharmacies with "high" prescription sales (Table 28). No statistically significant differences were found to exist using the Fisher exact probability test.

Relatively fewer pharmacies whose major buying objective was to "achieve a low cost of goods" used the wholesale cooperative as their major wholesale source of supply, when compared to pharmacies indicating other goals as being most important (Table 29). This was true among pharmacies with both "low" and "high" prescription sales. The results were just the opposite of what was expected; however, the Fisher exact probability test results indicated that these differences were not statistically significant. These results indicated that pharmacies whose most important goal is to "achieve the lowest possible cost of goods" do not differ significantly from others with respect to the use of a retailer-sponsored cooperative as the major wholesale source of supply.

The extent of pharmacy participation in special wholesaler prescription drug purchase plans was also investigated to determine if similar patterns would emerge (Table 30). The results indicated that relatively fewer pharmacies whose major objective was to obtain the lowest possible cost of goods participated in such plans. However, the results of the Fisher exact probability test again indicated that the differences between the two groups were not significant for both pharmacies with "low" and "high" prescription sales.

The results indicated a tendency among pharmacies indicating that achieving a low cost of goods was their most important buying policy objective to purchase relatively more prescription drugs directly from manufacturers. The results also indicated a tendency not to utilize wholesale sources of supply in a manner generally associated with attaining lower costs of goods when this was the most important buying policy objective. In each case, however, there was insufficient evidence to indicate that pharmacies differed significantly with respect to prescription drug purchasing patterns according to whether or not "achieving the lowest possible cost of goods" was the most important prescription department buying policy objective.

CHAPTER V

SUMMARY AND CONCLUSIONS

Independent pharmacies have historically been the most frequently utilized source of prescription drug services in the United States. In recent years, however, two types of organizations have emerged to challenge the independent pharmacy's market position as the major source of supply for out-patient prescriptions. One source of competition has come from the various types of health care organizations which provide a variety of health-related services, including pharmacy services, through a single organizational structure.

At the present time, however, the most formidable source of competition has come from large scale retailing, typified by chain drug stores. Major reasons for their success appear to be related to a low price, high volume marketing approach, facilitated by the operational economies associated with larger size and higher sales volumes. If independent pharmacies are to remain viable entities in retail drug distribution, one approach is to seek methods to neutralize the operational advantages of larger scale retailers.

One economic advantage of large scale retailers is centered in product purchasing. They appear to be able to attain lower per-unit prescription drug costs through available purchasing discounts from sources utilized. The achievement of these economies facilitates the employment of a low margin, high volume marketing technique. Since prescription drug costs represent approximately half of the prescription charge, it would further appear that the neutralization of these purchasing advantages would be an area of major concern to independent pharmacies. A review of the literature indicated that little is known concerning the nature of prescription drug purchase behaviors among independent pharmacies, or of their potential impact upon per unit acquisition costs. In addition, little is known concerning the factors influencing these behaviors. The major objectives of this study were to identify the prescription drug purchasing patterns of independent pharmacies, and to investigate the potential relationships of selected pharmacy characteristics to selected purchasing patterns. Such an investigation should add to existing knowledge and understanding of prescription drug purchasing behavior by independent pharmacies. In addition, this knowledge may also be used

to begin to identify those factors that contribute to more appropriate purchasing behaviors.

The investigation focused on purchasing practices which potentially offer relatively low per-unit drug costs. It was recognized that these cost savings would be at least partially offset by increased inventory carrying costs. An investigation of inventory carrying costs and their relationship to purchasing patterns was considered to be beyond the scope of this study, and would be an appropriate area for further study. However, given the extent of most purchasing discounts, it appears that the potential exists for many pharmacies to realize economic advantages in purchasing from least cost sources.

A random sample of fifty independent pharmacies was drawn from the universe of all pharmacies in the Portland, Oregon, metropolitan area. The prescription drug purchasing behavior of independent pharmacies was explored by means of a personal interview technique using a structured questionnaire.

The results indicated that independent pharmacies utilized both manufacturers and wholesalers as sources of supply for prescription drugs, with wholesalers being utilized somewhat more frequently. Among all independent pharmacies, approximately 60 percent of all

prescription drug dollar purchases were made from drug wholesalers, and the balance was made directly from pharmaceutical manufacturers. The findings further indicated that pharmacies tended to maintain direct purchasing accounts with a select list of the pharmaceutical manufacturers whose products are among the most frequently ordered, and that they utilized these accounts for the majority of purchases of prescription drugs produced by these manufacturers. Since lower per unit prescription drug costs are associated with manufacturer-direct purchasing, the results suggest that, whenever possible independent pharmacies attempted to attain these lower per unit prescription drug costs. In recent years, there has been a shift in many manufacturer's pricing policies toward a single pricing structure for all classes of purchasers. This shift in many cases has resulted in added benefits to independent pharmacies, particularly from direct purchasing, and should provide added incentives in this direction.

The findings also suggested that manufacturer's direct ordering policies tend to effectively limit or restrict this source of supply to the larger pharmacies. Pharmacies maintaining accounts with manufacturers who had relatively high minimum purchase order requirements were found to have had significantly higher prescription

and total pharmacy sales than pharmacies who maintained purchasing accounts with manufacturers who had lower minimum purchase order requirements.

Independent pharmacies indicated that they purchased prescription drugs from three to four different wholesale sources of supply during the past year, although only one source was used for the majority of prescription drug purchases from wholesalers. Nearly all pharmacies were found to have concentrated wholesale prescription drug purchases with a single supplier. Previous discussion has indicated that concentration of purchases with a single wholesaler can result in a number of operating advantages to the pharmacy, including the potential for reduced per unit prescription drug costs. Approximately half of the pharmacies also indicated that they participated in wholesaler-sponsored plans whereby extra discounts are obtained for concentrated purchases. These findings indicate that pharmacies generally attempt to attain lower per unit costs through concentration of purchases from wholesale sources.

The wholesale source of supply most often used by independent pharmacies for prescription drug purchases was a retailer-sponsored cooperative. Three of every four pharmacies indicated that most prescription drug

purchases were made from this source. This source may be characterized as a full-line, limited service wholesaler. The remaining pharmacies identified other full-line, full-service wholesalers as most frequently used wholesale sources of supply. Thus, there was a definite preference pattern toward the use of full-line and at least limited service wholesalers as major sources of supply for prescription drug purchases. This preference pattern could, however, reflect the choice of available wholesale sources of supply. Three of the four locally available wholesale sources of supply were full-line wholesalers. The preference pattern could also reflect a tendency among independent pharmacies to utilize the same source for prescription drug as well as other pharmacy purchases. However, this possibility was not examined. The frequent use of the retailer-sponsored wholesale cooperative indicated that independent pharmacies substantially supported this type of buying organization. A unique attribute of the wholesale cooperative was an additional discount available in the form of a year-end patronage dividend. It appeared that the dividend may be one important factor contributing to its preference among all wholesale sources of supply. However, this source appeared to offer only minimal product cost savings as compared

to routine (non-concentrated) purchasing from other wholesale sources of supply.

Patterns of cooperative prescription drug purchasing through informal groups were also identified. This purchasing method involves placing orders directly with manufacturers, but on a cooperative, or "pooled" order basis with other retailers. Nearly half of the pharmacies indicated that they participated in informal group purchasing. The groups were very small in size, averaging three pharmacies per group, and orders were placed on an average of once every five to six weeks. Thus, although informal group purchasing structures existed, they were not well developed, and were not frequently nor extensively used for prescription drug purchases. The retailer-sponsored wholesale cooperative and the informal group were the only types of voluntary or cooperative prescription drug buying organizations found to exist in this market.

The purchasing of drugs for dispensing when generically-specified prescription drug orders occur represents another potential means of achieving purchase economies. Pharmacists may dispense the prescription product of any manufacturer when dispensing generically-specified prescriptions, providing it meets federal safety and efficacy standards. The results indicated

that pharmacies generally purchased the relatively lower-priced generically-specified prescription drugs. However, there was no tendency to purchase these products from either "major" or "minor" pharmaceutical manufacturers. This manufacturer differentiation was assumed to be the major criterion for pharmacist-perceived product quality differences.

These findings strongly suggest that one important concern of independent pharmacies purchasing generically-specified prescription drugs is the attainment of low per unit drug costs. Further, economic criteria appeared to be more important than quality criterion in the selection of drugs for dispensing on generically-specified prescription, if assumptions concerning the basis for pharmacist-perceived quality criteria were correct. If these findings are substantiated, there may be major implications to the medical profession and to the public, as well as to independent pharmacies. If present trends toward more prescribing by generic name continue with the pharmacist incurring the responsibility for manufacturer selection, there can be economic benefits to pharmacies, and to the general public if any cost savings are passed on to the consumer. However, the shift in manufacturer product selection to the pharmacist may be reversed if medical practitioners insist upon higher quality levels

than those maintained by governmental regulations, and if it becomes apparent that price is the major criterion employed by pharmacists in product selection. Alternatively, if either public or private mechanisms develop to facilitate additional levels of qualitative control over the products being selected for dispensing on generically-specified prescription drug orders, prescribing by generic name is likely to continue. There are presently movements in this direction through public mechanisms. Additional supportive evidence, including investigation of a wider range of generically-specified products, sampling of pharmacies in other markets, and further investigations of the bases for pharmacist perceptions of product quality differences is needed before these findings may be generalized.

There was a tendency to utilize local manufacturers in purchasing generically specified drugs when utilizing products of "minor" manufacturers; however, these products were most often obtained from drug wholesalers, rather than directly from the manufacturer. This preference pattern could have been attributable to convenience and familiarity factors. It may also have been due to a limited selection of "minor" manufacturers' drug products maintained by local drug wholesalers; however, no attempt was made to investigate this possibility.

In an effort to further explain patterns of prescription drug purchasing, the relationship between purchasing patterns and selected pharmacy characteristics was investigated. The pharmacy characteristics investigated included pharmacy size as indicated by annual prescription sales, the extent of the prescription department manager's pharmacy experience and formal educational training, the perceived degree of price competition existing within each pharmacy's trading area for prescription services, and pharmacy objectives in prescription drug purchasing. Each pharmacy characteristic was assumed to have an influence upon prescription drug purchasing behavior. Purchasing patterns were examined which are generally considered to provide lower per-unit drug costs relative to routine wholesale purchasing. The purchasing patterns examined included the relative dollar amount of prescription drug purchases made directly from manufacturers, the use of informal buying groups, the use of the retailer-sponsored wholesale cooperative as a major wholesale source of supply, and the participation in special wholesaler sponsored purchasing plans whereby extra discounts are received for concentrated purchases.

The results indicated that pharmacy size, as measured by the extent of prescription sales, and the

percentage of prescription drug purchases made directly from manufacturers were directly related. This finding suggests that the accessibility and use of this source of supply is directly related to the pharmacy's prescription sales volume. Thus, the smaller the pharmacy, the apparent greater difficulty in utilizing this source.

The results indicated no significant differences in the extent of affiliation with informal buying groups according to prescription sales, nor in the use of the cooperative as the major wholesale source of supply. However, it was found that the extent of participation in special wholesaler-sponsored concentrated purchasing plans was significantly greater among pharmacies with annual prescription sales of 60,000 dollars or more, than among pharmacies with annual prescription sales of less than 60,000 dollars. Forty percent of the pharmacies with higher prescription sales participated in such groups, compared to only 16.7 percent of the pharmacies with lower prescription sales. The findings suggested that this purchasing alternative was not frequently pursued, particularly by pharmacies with relatively low prescription sales. This may have been due to the relative inaccessibility of this purchasing alternative to the smaller pharmacies. The

larger pharmacies, on the other hand, apparently considered this source accessible and economically advantageous. Further study needs to be made into the characteristics of such plans and into how they might be made more accessible to smaller pharmacies.

Prescription department managers generally had a substantial amount of experience in retail pharmacy practice, averaging over twenty years per manager. The high experience levels may have been related to pharmacy ownership. Although exact numbers were not recorded, well over half of the managers interviewed were pharmacy owners. The relatively few number of prescription department managers with low experience levels limited any investigation of the potential relationships to purchasing behaviors. In addition, it appeared that the length of pharmacy school curriculum is not a good measure of the level of formal managerial training for retail pharmacy practice in that an extremely unequal distribution of responses occurred.

The median level of prescription price competition perceived by pharmacists to exist within their trading areas was "fairly high", indicating that pharmacists generally perceived their environment to be highly competitive. Pharmacies categorized according to perceived

levels of retail prescription price competition did not differ significantly with respect to the relative amount of prescription drug purchases made directly from manufacturers, to the use of informal buying groups, to the use of the retailer-sponsored cooperative as the major wholesale source of supply, or to the extent of participation in special wholesaler-sponsored quantity purchase plans. The lack of statistically significant relationships suggests that pharmacy managers who perceive relatively high degrees of price competition to exist within their trading areas do not transform this perception into purchasing patterns generally associated with attaining lower per-unit prescription drug costs. Although a "profit squeeze," characterized by lower net profit ratios due to declining sales, rising expenses, or both, can be a resulting economic condition for pharmacies unable to effectively compete in highly competitive environments, the findings suggested that pharmacies either have not experienced this condition, or that their response to it has not been a relatively greater use of sources of supply generally associated with lower per unit prescription drug costs.

If a "profit squeeze" condition did not exist in the pharmacy, it may indicate that the level of competition had not resulted in declining sales. Declining

sales may not have occurred if the level of price competition was perceived incorrectly. However, it was previously indicated that large scale retailing had a major share of this market, indicating that, in general, perceptions of high price competition were correct. An alternate explanation is that the rate of prescription sales increase for the independent pharmacy may have been less than that for other competitive firms, resulting in a declining market share. This situation can occur in a growing market, as is the case nationally for prescription drugs. Thus, for individual pharmacies, increasing prescription sales may mask the effect of high levels of prescription price competition. Independent pharmacy managers may not have been aware of this situation and, therefore, may not have been particularly motivated to modify purchasing patterns.

On the other hand, pharmacies may have experienced a "profit squeeze," but may have responded by attempting to lower other operating costs, or by attempting to increase sales via market segmentation and by participation in various forms of non-price competition. In this study, these alternative explanations were not explored, but are appropriate areas for further investigation. It would appear that the presence of high levels of price competition should have encouraged pharmacies to initiate

changes in purchasing behaviors in the direction of the attainment of lower per unit drug costs, regardless of other responses taken. It would appear that independent pharmacies need to be better informed of the effects of various levels of price competition upon their market position.

Among all pharmacies, the most frequently identified purchasing objective was "achieving the lowest possible cost of goods." It was also the most frequently chosen objective among pharmacies with annual prescription department sales below 60,000 dollars, while "maintaining a low number of stockouts" was the most frequently chosen objective among pharmacies with annual prescription sales of 60,000 dollars or more. This finding suggests that particularly among the smaller pharmacies, there is a strong perceived need to achieve lower operating costs in prescription drug purchasing. Pharmacies categorized according to whether or not "achieving the lowest possible cost of drugs" was indicated as the most important purchasing objective did not differ significantly with respect to any of the four purchasing patterns investigated.

These findings were inconsistent with expectations, as well as with previously cited findings. The larger pharmacies appeared to have attained lower per unit

drug costs by utilizing the identified sources of supply to a relatively greater extent than did the smaller pharmacies. However, the larger pharmacies identified "maintaining a low number of stock outs" as their most important specific purchasing objective, while the smaller pharmacies indicated "achieving the lowest possible cost of goods" was most important. One explanation is that these objectives represent desired but unachieved, rather than achieved purchasing objectives. There may be major barriers to the attainment of these objectives. It was previously indicated, for example, that smaller pharmacies have restricted access to some sources due to suppliers' ordering restrictions. Objectives may also have not been achieved because of mismanagement, a lack of sufficient managerial attention directed to the purchasing activity, or a lack of knowledge concerning the appropriate purchasing techniques to be employed. Because the objective of "attaining the lowest possible cost of goods" is apparently not being attained, managers of smaller pharmacies need to direct more of their attention to the purchasing function, particularly when this objective is indicated as most important.

The above discussion has indicated that a variety of purchasing patterns and sources of supply are

utilized by independent pharmacies. Pharmacies generally indicated an interest in attaining lower per unit drug costs, and indicated that they made a substantial portion of their prescription drug purchases from sources of supply offering lower per unit drug costs. Pharmacy size, as indicated by prescription department sales, was the only pharmacy characteristic found to be related to patterns of purchasing generally associated with the attainment of relatively low per unit prescription drug costs. The larger pharmacies (those with annual prescription sales over 60,000 dollars) were found to have utilized two sources of supply generally offering lower per unit prescription drug costs to a significantly greater extent than did the smaller pharmacies.

Although the findings of this study are applicable only to the size range of the independent pharmacies included in this study, it would appear that the relationship of pharmacy size to economic advantages in prescription drug purchasing also holds true for larger pharmacy types not included in this study. This would include chain drug stores and large scale "discount" type retailers, whose purchasing power is related to the size and number of retail units under common ownership.

These findings can have substantial implications for smaller independent pharmacies. The inability to attain equally low per unit prescription drug costs may severely impair their ability to compete with larger pharmacies, and may thereby continue to jeopardize their position in the prescription drug market. It appears that the only alternative to these pharmacies for neutralizing this economic disadvantage is to become larger as independents by increasing sales (particularly prescription sales), or by combining resources with those of other retail pharmacies. The horizontal integration of pharmacy resources can be complete, to create a retail pharmacy "chain." Alternatively, resources can be partially integrated through various forms of voluntary or cooperative buying organizations. These organizations attempt to emulate certain aspects of the organizational structure of chain drug stores, through horizontal and often vertical integration of resources, for the purpose of achieving equivalent buying power. Purchasing advantages are obtained for member pharmacies through collective ordering from suppliers in relatively large sizes.

In this study, only two types of cooperative buying organizations were found to be used for the

purchase of prescription drugs. One was a retailer-sponsored wholesale cooperative which, while not offering substantial purchasing advantages, was widely used by both large and small pharmacies as the major wholesale source of supply. The smaller pharmacies, however, were found to have used this source somewhat less frequently than did the larger pharmacies, although no statistically significant differences existed. The other type was the informal buying group, which appeared to offer substantial purchasing discounts. However, this source was generally not frequently used, was not used to a significantly greater extent by smaller pharmacies, and was not organizationally well-developed. It would appear that informal buying groups could be more extensively developed and utilized by smaller pharmacies to attain lower per-unit drug costs. It may be that real or perceived disadvantages are associated with the use of these sources by the smaller pharmacies, which were not revealed in this study. Further investigation is needed to determine why they were not used to a relatively greater extent, particularly by the smaller pharmacies in this market.

The potential also exists for the development of more highly structured, vertically as well as horizontally integrated voluntary chains in retail pharmacy, similar

to those developed with the retail grocery market. Although they offer operating economies similar to those available to chain outlets, they have not been well-accepted nationally by independent pharmacy entrepreneurs. Independent entrepreneurs appear to be unwilling to relinquish, even partially, their "independent" status and their responsibility for those functions that are centrally managed in such organizational structures. However, it appears that trends toward eventual domination of the prescription drug market by chain drug stores and other larger scale retailers will continue, and that various forms of voluntary organizations offer the one avenue of continuity for the independent retail pharmacy.

In recent years, there have been indications that increasing numbers of drug wholesalers are sponsoring various types of cooperative organizations, perhaps indicating that they now perceive a threat to their position in the marketing channel. As competition becomes increasingly intense, independent pharmacies may be expected to become more motivated to join and actively support such groups, much as independent entrepreneurs did in the retail grocery trade. If they do not, their economic future would not appear promising in view of present trends.

Recent national interest in national health insurance, the development and growth of third party payment systems, and more comprehensive, integrated health care systems should also provide incentives for change to all components of the traditional medical care delivery system, including retail pharmacy. Cooperation and integration with other providers of health care services would again appear to be indicated as a means of competing with these emerging types of organizations.

Although the objectives of this study did not include a comparative evaluation of purchasing behaviors observed, there were indications from the results that the purchasing activities may not be optimally managed in independent pharmacies. A study specifically evaluating the comparative purchasing and inventory management practices among independent pharmacies would appear to be warranted. Such a study might involve determinations of the economic advantages of various purchasing practices, and systematic comparisons to accepted, established economic goals or standards for the inventory management function, such as the maximization of the return on the pharmacy investment in drug inventories. An investigation of this nature could

elucidate specific areas for improvement of operational efficiencies in the purchasing and inventory management function in retail pharmacies.

TABLE 1

ESTIMATED NUMBER AND PERCENTAGE
DISTRIBUTION OF OUT-PATIENT
PRESCRIPTIONS DISPENSED BY
TYPE OF VENDOR, FROM
SELECTED SOURCES,
1966-1970

Year	Independent		Chain ⁷		Other Retail ⁸		Hospital		Total	
	N ⁹	%	N	%	N	%	N	%	N	%
1966	800.1	76.0	88.1	8.4	72.9	6.9	91.4	8.7	1052.5	100.0
1967	829.3	73.3	101.6	9.0	91.1	8.0	110.0	9.7	1132.0	100.0
1968	886.1	71.3	119.0	9.6	114.2	9.2	123.7	9.9	1243.0	100.0
1969	907.5	69.3	129.5	9.9	135.2	10.3	137.6	10.5	1309.8	100.0
1970	931.0	67.9	139.2	10.2	145.9	10.6	154.1	11.3	1370.2	100.0

Source: Social Security Administration, Office of Research and Statistics (49, p. 30).
The table excludes dispensing physicians.

⁷Defined by this source as four or more retail units under common ownership.

⁸Includes department stores, supermarkets, and "discount" stores.

⁹In millions.

TABLE 2

NUMBER AND PERCENT OF INDEPENDENT
AND CHAIN RETAIL PHARMACIES BY
SELECTED YEARS, 1950-1970

Year	Independent		Chain ¹⁰		Total	
	N	%	N	%	N	%
1950	44,001	92.3	3,662	7.7	47,663	100.0
1960	47,342	92.1	4,044	7.9	51,386	100.0
1965	47,485	90.5	4,981	9.5	52,446	100.0
1966	46,828	90.1	5,125	9.9	51,953	100.0
1967	46,674	89.3	5,591	10.7	52,265	100.0
1968	46,337	88.5	6,030	11.5	52,367	100.0
1969	45,093	87.6	6,383	12.4	51,476	100.0
1970	43,870	87.1	6,511	12.9	50,381	100.0

Source: American Druggist annual surveys (44; 47, p. 62).

¹⁰Defined by this source as four or more retail units under common ownership.

TABLE 3

TOTAL ANNUAL SALES AND PERCENT
DISTRIBUTION OF CHAIN AND
INDEPENDENT RETAIL
PHARMACIES BY
SELECTED YEARS,
1950-1970

Year	Independent		Chain ¹¹		Total	
	\$ ¹²	%	\$	%	\$	%
1950	2,999	78.6	816	21.4	3,815	100.0
1960	5,641	76.0	1,786	24.0	7,427	100.0
1965	6,491	70.0	2,787	30.0	9,278	100.0
1967	7,235	66.6	3,627	33.4	10,862	100.0
1968	7,553	64.4	4,167	35.6	11,720	100.0
1969	7,750	62.8	4,585	37.2	12,335	100.0
1970	8,078	61.8	5,050	38.2	13,228	100.0

Source: American Druggist annual surveys (44; 47, p. 62).

¹¹Defined by this source as four or more retail units under common ownership.

¹²In millions.

TABLE 4

NUMBER AND PERCENT OF
PHARMACIES BY TOTAL
ANNUAL SALES

Total Sales	Pharmacies	
	N	%
Under \$50,000	4	8.2
\$50,000 to \$99,999	11	22.4
\$100,000 to \$149,999	14	28.5
\$150,000 to \$199,999	10	20.4
\$200,000 to \$249,999	4	8.2
\$250,000 to \$299,999	2	4.1
\$300,000 or more	<u>4</u>	<u>8.2</u>
Total	49 ^{1 3}	100.0

Average total Sales per Pharmacy: \$146,400

^{1 3}One pharmacy did not provide this information.

TABLE 5

NUMBER AND PERCENT OF
PHARMACIES BY ANNUAL
PRESCRIPTION SALES

Prescription Sales	Pharmacies	
	N	%
\$0-\$9,999	1	2.0
\$10,000-\$19,999	2	4.0
\$20,000-\$29,999	3	6.0
\$30,000-\$39,999	5	10.0
\$40,000-\$49,999	6	12.0
\$50,000-\$59,999	8	16.0
\$60,000-\$69,999	4	8.0
\$70,000-\$79,999	9	18.0
\$80,000-\$89,999	3	6.0
\$90,000-\$99,999	6	12.0
\$100,000 or more	<u>3</u>	<u>6.0</u>
Total	50	100.0

Average Prescription Sales per Pharmacy: \$61,200

TABLE 6

NUMBER AND PERCENT OF RETAIL PHARMACIES BY
PROPORTION OF PRESCRIPTION TO
TOTAL ANNUAL SALES

Proportion of Prescription to Total Sales	Pharmacies	
	N	%
Less than 19%	2	4.1
20-39%	10	20.4
40-59%	22	44.9
60-79%	10	20.4
80-100%	<u>5</u>	<u>10.2</u>
Total	49 ¹⁴	100.0

Average proportion of prescription to total sales: 41.9%

¹⁴One pharmacy did not provide this information.

TABLE 7

NUMBER AND PERCENT OF PHARMACIES
PURCHASING PRESCRIPTION DRUGS
DIRECT FROM MANUFACTURERS

Percentage of pur- chases direct from manufacturers	Pharmacies		Mean percent of pur- chases direct from manufacturers
	N	%	
0-14.9	2	4.0	5.0
15-24.9	6	12.0	19.2
25-34.9	7	14.0	30.1
35-44.9	18	36.0	39.4
45-54.9	11	22.0	48.6
55-64.9	2	4.0	60.0
65-74.9	1	2.0	70.0
75 and over	<u>3</u>	<u>6.0</u>	80.0
Total	50	100.0	

TABLE 8

PERCENT, MEAN TOTAL SALES, AND MEAN PRESCRIPTION
 SALES OF PHARMACIES WHO MAINTAIN DIRECT
 PURCHASING ACCOUNTS WITH SELECTED
 MANUFACTURERS CATEGORIZED BY
 MINIMUM PURCHASE ORDER SIZE

Minimum Purchase Order Size	Percent of Pharmacies Maintaining Direct Account	Mean Pharmacy Total Sales	Mean Pharmacy Prescription Sales
<u>Low (\$50 or less)</u>			
Abbott	86.0	\$156,395	\$ 64,773
Lederle	86.0	148,256	63,636
Merck Sharpe & Dohme	88.0	153,409	64,778
Parke-Davis	90.0	155,000	64,782
Pfizer	92.0	165,741	72,857
Squibb	82.0	162,805	69,419
Upjohn	96.0	148,958	62,347
<u>High (over \$50)</u>			
CIBA	28.0	\$192,857	\$ 80,333
Endo	52.0	173,077	75,741
Roche	14.0	189,286	87,857
Schering	24.0	154,167	82,500
Warner Chilcott	4.0	275,000	100,000
Wyeth	94.0	150,532	62,917

TABLE 9

NUMBER OF DIFFERENT WHOLESALE SOURCES
USED BY PHARMACIES FOR
PRESCRIPTION DRUG
PURCHASES WITHIN
THE PAST YEAR

Number of Different Wholesalers	Pharmacies	
	N	%
One	0	0
Two	4	8.0
Three	22	44.0
Four	22	44.0
Five or More	<u>2</u>	<u>4.0</u>
Total	50	100.0

TABLE 10

DRUG WHOLESALERS BY TYPE AND
RANKED ACCORDING TO PHARMACY
EXPENDITURES FOR
PRESCRIPTION
DRUGS

Type of Wholesale Source For Highest Expenditures	Pharmacies		Type of Wholesale Source For Second Highest Expenditures	Pharmacies	
	N	%		N	%
Cooperative	37	75.5	Full-line, service	25	67.6
			Specialty line	10	27.0
			Unspecified	2	5.4
			Subtotal	37	100.0
Full-line, service	12	24.5	Cooperative	5	41.7
			Full-line, service	4	33.3
			Specialty line	3	25.0
			Subtotal	12	100.0
Specialty line	0	0		0	0
Total	49 ¹⁵	100.0		49 ¹⁵	100.0

¹⁵One pharmacy did not provide this information.

TABLE 11

PERCENTAGE OF PHARMACIES PURCHASING RELATIVELY
LOW COST GENERICALLY-SPECIFIED
PRESCRIPTION DRUG PRODUCTS

Generic Drug	Relative Price Range	Percentage of Pharmacies Purchasing Low Cost Products
Meprobamate 400mg	narrow	70.8
Penicillin G 250mg	wide	96.0
Phenobarbital 30mg	narrow	100.0
Prednisone 5mg	wide	97.9
Reserpine 0.25mg	wide	91.8
Tetracycline 250mg	wide	98.0
Thyroid 60mg	narrow	4.0

TABLE 12

PERCENT OF PHARMACIES USING GENERICALLY-
SPECIFIED PRESCRIPTION DRUG PRODUCTS OF
MANUFACTURERS WHO WERE PMA MEMBERS
AND WHO WERE PRIMARILY
BRAND NAME MARKETERS¹⁶

Generic Drug	Percent of Pharmacies by Manufacturer Characteristics	
	Members of the PMA	Primarily Brand Name Marketers
Meprobamate 400 mg	27.1	25.0
Penicillin G 250mg	85.8	83.7
Phenobarbital 30mg	74.0	66.0
Prednisone 5 mg	36.2	2.1
Reserpine 0.25mg	45.0	8.2
Tetracycline 250mg	55.0	55.0
Thyroid 60mg	96.0	96.0

¹⁶Pharmaceutical Manufacturers' Association

TABLE 13

LOCATION OF MANUFACTURERS WHOSE PRODUCTS
WERE MOST OFTEN DISPENSED ON
GENERALLY-SPECIFIED
PRESCRIPTIONS

Generic Drug	Number of Pharmacies by Manufacturer Location			Percent of Pharmacies Selecting Manufac- turers Located in Portland Area
	Portland Area	Other	Total ¹⁷	
Meprobamate 400mg	40	8	48	83.4
Penicillin G 250mg	38	11	49	77.6
Phenobarbital 30mg	15	35	50	30.0
Prednisone 5mg	41	6	47	87.3
Reserpine 0.25mg	41	8	49	83.8
Tetracycline 250mg	18	31	49	36.8
Thyroid 60mg	2	48	50	4.0

¹⁷Three pharmacies did not provide complete information.

TABLE 14

LOCATION OF MINOR MANUFACTURERS WHOSE
 PRODUCTS WERE MOST OFTEN DISPENSED
 ON GENERICALLY-SPECIFIED
 PRESCRIPTIONS¹⁸

Generic Drug	Number of Pharmacies by Manufacturer Location			Percent of Pharmacies Selecting Manufac- turers Located in Portland Area
	Portland area	Other	Total	
Meproamate 400mg	30	5	35	85.7
Penicillin G 250mg	6	1	7	85.7
Phenobarbital 30mg	10	3	13	76.9
Prednisone 5mg	24	6	30	80.0
Reserpine 0.25mg	21	6	27	77.8
Tetracycline 250mg	16	6	22	72.7
Thyroid 60mg ¹⁹	--	--	--	----

¹⁸Minor manufacturers are herein defined as manufacturers who market products primarily by their generic name, and who are not members of the Pharmaceutical Manufacturers' Association.

¹⁹Insufficient data.

TABLE 15

NUMBER AND PERCENT OF PHARMACIES BY
 MAJOR SOURCES USED FOR PURCHASING
 GENERICALLY-SPECIFIED
 PRESCRIPTION DRUG
 PRODUCTS

Generic Drug	Major Source					
	Wholesaler		Direct from Manufacturer		Total	
	N	%	N	%	N ²⁰	%
Meprobamate 400mg	32	68.1	15	31.9	47	100.0
Penicillin G 250mg	8	16.6	40	83.4	48	100.0
Phenobarbital 30mg	16	33.3	32	66.7	48	100.0
Prednisone 5mg	24	52.2	22	47.8	46	100.0
Reserpine 0.25mg	25	52.1	23	47.9	48	100.0
Tetracycline 250mg	17	35.4	31	64.6	48	100.0
Thyroid 60mg	40	80.0	10	20.0	50	100.0
All drugs		48.4		51.6		100.0

²⁰Four pharmacies did not provide complete information.

TABLE 16

NUMBER AND PERCENT OF PHARMACIES BY
 MAJOR SOURCES USED FOR
 PURCHASING GENERICALLY-
 SPECIFIED PRESCRIPTION
 DRUG PRODUCTS OF MINOR
 MANUFACTURERS²¹

Generic Drug	Major Source					
	Wholesaler		Direct from Manufacturer		Total	
	N	%	N	%	N	%
Meprobamate 400mg	29	82.9	6	17.1	35	100.0
Penicillin G 250mg	6	85.7	1	14.3	7	100.0
Phenobarbital 30mg	7	58.3	5	41.7	12	100.0
Prednisone 5mg	9	30.0	21	60.0	30	100.0
Reserpine 0.25mg	19	70.4	8	29.6	27	100.0
Tetracycline 250mg	17	77.3	5	22.7	22	100.0
Thyroid 60mg ²²	--		--		--	
All drugs ²³	87	65.4	46	34.6	133	100.0

²¹ Minor manufacturers are herein defined as manufacturers who market products primarily by their generic name, and who are not members of the Pharmaceutical Manufacturers' Association.

²² Insufficient data.

²³ Excluding thyroid.

TABLE 17

THE NUMBER AND PERCENT OF PHARMACIES WITH
 "LOW" AND "HIGH" PRESCRIPTION SALES
 PURCHASING PRESCRIPTION DRUGS
 THROUGH INFORMAL BUYING
 GROUPS

Participation Status in Informal Buying Groups	Prescription Sales			
	Low (under \$60,000)		High (\$60,000 or over)	
	N	%	N	%
Participated	11	44.0	12	48.0
Did not Participate	14	56.0	13	52.0
Total	25	100.0	25	100.0

TABLE 18

NUMBER AND PERCENT OF PHARMACIES
WITH LOW AND HIGH PRESCRIPTION
SALES BY TYPE OF WHOLESALER
USED AS MAJOR SOURCE

Major Wholesale Source	Prescription Sales			
	Low (under \$60,000)		High (\$60,000 or over)	
	N	%	N	%
Cooperative	16	66.7	21	84.0
Other Wholesaler	8	33.3	4	16.0
Total	24 ^{2 4}	100.0	25	100.0

^{2 4}One pharmacy did not provide this information.

TABLE 19

NUMBER AND PERCENT OF PHARMACIES
 WITH LOW AND HIGH PRESCRIPTION
 SALES PURCHASING PRESCRIPTION
 DRUGS THROUGH WHOLESALER-
 SPONSORED CONCENTRATED
 PURCHASE PLANS

Participation Status in Wholesaler- Sponsored Concentrated Purchase Plans	Prescription Sales			
	Low (Under \$60,000)		High (\$60,000 or over)	
	N	%	N	%
Participated	4	16.7	10	40.0
Did Not Participate	20	83.3	15	60.0
Total	24 ^{2 5}	100.0	25	100.0

^{2 5}One pharmacy did not provide this information.

TABLE 20

NUMBER AND PERCENT OF PHARMACIST-
MANAGERS BY YEARS OF RETAIL
PHARMACY EXPERIENCE

Years of Experience	Pharmacist-Managers	
	N	%
0-4	3	6.0
5-9	4	8.0
10-14	10	20.0
15-19	8	16.0
20-24	9	18.0
25-29	3	6.0
30 or more	13	26.0
All Years	50	100.0

Average number of years' experience: 21.4

TABLE 21

NUMBER AND PERCENT OF PHARMACIST-
MANAGERS BY LENGTH OF
PHARMACY SCHOOL
EDUCATION

Length of Education	Pharmacist-Managers	
	N	%
3 years	4	8.0
4 years	38	76.0
5 years	8	16.0
Total	50	100.0

TABLE 22

NUMBER AND PERCENT OF PHARMACIST-
MANAGERS BY PERCEIVED DEGREE
OF PRICE COMPETITION WITHIN
TRADING AREA

Perceived Degree of Price Competition	Pharmacist-Managers	
	N	%
Very High	11	22.0
Fairly High	17	34.0
Medium	14	28.0
Fairly Low	2	4.0
Very Low	4	8.0
None	2	4.0
Total	50	100.0

TABLE 23

STATUS OF PARTICIPATION IN INFORMAL
 BUYING GROUPS AMONG PHARMACIES BY
 PRESCRIPTION SALES AND BY
 PERCEIVED DEGREE OF PRICE
 COMPETITION FOR
 PRESCRIPTIONS

Participation Status in Informal Groups	Prescription Sales							
	Low (under \$60,000)				High (\$60,000 or over)			
	Price Competition		Price Competition		Price Competition		Price Competition	
	Not	High	High		Not	High	High	
N	%	N	%	N	%	N	%	
Participated	5	45.5	6	42.9	6	55.5	6	42.9
Did Not Participate	6	55.5	8	57.1	5	45.5	8	57.1
Total	11	100.0	14	100.0	11	100.0	14	100.0

TABLE 24

MAJOR WHOLESALE SOURCE USED FOR PRESCRIPTION DRUG
PURCHASES AMONG PHARMACIES BY PRESCRIPTION
SALES AND BY PERCEIVED DEGREE OF PRICE
COMPETITION FOR PRESCRIPTIONS

Major Wholesale Source	Prescription Sales							
	Low (under \$60,000)				High (\$60,000 or over)			
	Price Competition				Price Competition			
	Not High		High		Not High		High	
	N	%	N	%	N	%	N	%
Cooperative	6	60.0	10	71.4	11	100.0	11	78.6
Other Wholesaler	4	40.0	4	28.6	0	0	3	21.4
Total	10 ²⁶	100.0	14	100.0	11	100.0	14	100.0

²⁶One pharmacy did not provide this information.

TABLE 25

STATUS OF PARTICIPATION IN WHOLESALER-SPONSORED CONCENTRATED
PURCHASE PLANS AMONG PHARMACIES BY PRESCRIPTION SALES
AND BY PERCEIVED DEGREE OF PRICE COMPETITION
FOR PRESCRIPTIONS

Participation Status in Wholesaler- Sponsored Con- centrated Purchase Plans	Prescription Department Sales							
	Low (under \$60,000)				High (\$60,000 or over)			
	Price Competition				Price Competition			
	Not High		High		Not High		High	
	N	%	N	%	N	%	N	%
Participated	1	9.1	2	15.4	4	36.4	6	42.9
Did not participate	10	91.9	11	84.6	7	63.6	8	57.1
Total	11	100.0	13 ²⁷	100.0	11	100.0	14	100.0

²⁷One pharmacy did not provide this information.

TABLE 26

MOST IMPORTANT PURCHASING POLICY
OBJECTIVES AMONG PHARMACIES
CATEGORIZED BY PRESCRIPTION
SALES

Most Important Objective	Prescription Sales					
	Low (under \$60,000)		High (\$60,000+)		Total	
	N	%	N	%	N	%
Achieving the lowest possible cost of goods	9	36.0	8	32.0	17	34.0
Achieving the lowest possible number stockouts	6	24.0	10	40.0	16	32.0
Achieving a high stock turn	7	28.0	5	20.0	12	24.0
Maintaining a minimal stock level	3	12.0	2	8.0	5	10.0
Total	25	100.0	25	100.0	50	100.0

TABLE 27

MEAN PERCENTAGE OF DIRECT PRESCRIPTION DRUG
PURCHASES AMONG PHARMACIES BY MOST
IMPORTANT PURCHASING POLICY
OBJECTIVE AND BY
PRESCRIPTION
SALES

Most Important Objective	Prescription Sales		Total
	Low (under \$60,000)	High (\$60,000+)	
Low cost of goods	36.1	50.4	42.8
Other	33.0	46.8	38.8

TABLE 28

STATUS OF PARTICIPATION IN INFORMAL BUYING GROUPS
AMONG PHARMACIES BY PRESCRIPTION SALES AND BY
MOST IMPORTANT PURCHASING POLICY OBJECTIVE

Participation Status in Informal Groups	Prescription Sales							
	Low (under \$60,000)				High (\$60,000 or over)			
	Major Objective				Major Objective			
	Low COGS ^{2 8}		Other		Low COGS ^{2 8}		Other	
	N	%	N	%	N	%	N	%
Participated	4	44.4	6	37.5	3	37.5	9	52.9
Did not participate	5	55.6	10	62.5	5	62.5	8	47.1
Total	9	100.0	16	100.0	8	100.0	17	100.0

^{2 8}Attainment of the lowest possible cost of goods sold.

TABLE 29

MAJOR WHOLESALE SOURCE OF SUPPLY USED FOR PRESCRIPTION
 DRUG PURCHASES AMONG PHARMACIES BY PRESCRIPTION
 SALES AND BY MOST IMPORTANT PURCHASING
 POLICY OBJECTIVE

Major Wholesale Source	Prescription Sales							
	Low (under \$60,000)				High (\$60,000 or over)			
	Major Objective				Major Objective			
	Low COGS ²⁹		Other		Low COGS ²⁹		Other	
	N	%	N	%	N	%	N	%
Cooperative	5	62.5	12	75.0	5	62.5	16	94.1
Other Wholesaler	3	37.5	4	25.0	3	37.5	1	5.9
Total	8 ³⁰	100.0	16	100.0	8	100.0	17	100.0

²⁹Attainment of the lowest possible cost of goods sold.

³⁰One pharmacy did not provide this information.

TABLE 30

EXTENT OF PARTICIPATION IN WHOLESALER-SPONSORED
 CONCENTRATED PURCHASE PLANS AMONG PHARMACIES
 BY PRESCRIPTION SALES AND BY MOST
 IMPORTANT PURCHASING POLICY
 OBJECTIVE

Status of Participation	Prescription Sales							
	Low (under \$60,000)				High (\$60,000 or over)			
	Major Objective				Major Objective			
	Low COGS ³¹		Other		Low COGS		Other	
	N	%	N	%	N	%	N	%
Participated	1	11.1	3	20.0	3	37.5	7	41.2
Did not participate	8	88.9	12	80.0	5	62.5	10	58.8
Total	9	100.0	15 ³²	100.0	8	100.0	17	100.0

³¹Attainment of the lowest possible cost of goods sold.

³²One pharmacy refused to divulge this information.

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APPENDICES

APPENDIX A
QUESTIONNAIRE

Purchasing Behavior of Independent
Retail Pharmacies

(Please circle the letter of the chosen response, or indicate your response in the space provided. All information obtained will remain strictly anonymous.)

1. Does the owner of this pharmacy own any other retail pharmacies?

- a. yes
- b. no

2. Please state, to the best of your knowledge, prescription department sales as a percentage of total sales in your pharmacy during the past year.

- a. less than 20%
- b. 20% to 39%
- c. 40% to 59%
- d. 60% to 79%
- e. 80% to 100%
- f. don't know

3. Please indicate according to last year's dollar expenditures, the approximate percentage of prescription drug purchases that were made from the following sources:

- | | | |
|--|-------|------|
| a. Purchases direct from Manufacturers | _____ | |
| b. Purchases through Wholesalers | _____ | |
| c. Other (please specify) _____ | _____ | |
| Total: | | 100% |

4. Among last year's purchases made direct from manufacturers, were your order ever combined with those of other pharmacies in group purchases of prescription drugs?

- a. yes
- b. no

5. Please rank the following wholesale sources of supply according to last year's dollar expenditures for prescription drugs in your pharmacy.

1 = highest amount of purchases
2 = second highest

- a. Full-line, full-service independent wholesaler
(ex: McKesson & Robbins, Northwestern Drug Co.)
- b. Limited-line, limited-service independent wholesaler
(ex: Western Drug Supply, Inc.)
- c. Retail-sponsored wholesale Cooperative (ex: Mutual Drug Co.)
- d. Other (please identify) _____

6. How many different wholesalers did you purchase prescription drugs from during the past year?
7. Did purchases from one particular wholesaler account for more than 50% of the total wholesale prescription drug purchases during the past year?
- yes
 - no
 - don't know
8. Are you a participant in any specific purchase plan offered by wholesalers, whereby extra discounts are received for concentrated purchases. (i.e., McKesson's "C.P. Account" plan)
- yes . . . If yes, please identify this plan by name, if known _____
 - no
 - don't know
9. On the chart below, please indicate by a check (✓) in the appropriate column:
- Those manufacturers with whom you have had a direct account for the purchase of prescription drugs during the past year.
 - The Major Source (more than 50% of purchases) for prescription products produced by each of the identified manufacturers during the past year.

NAME OF MANUFACTURER	a. Have Direct Account with Mfr.	b. MAJOR SOURCE	
		Direct from Mfr.	Wholesaler and Other
Abbott			
Burroughs-Wellcome			
CIBA			
Endo			
Geigy			
Lederle			
Merck Sharp & Dohme			
Parke-Davis			
Pfizer			
Pitman-Moore			
Robins			
Roche			
Roerig			
Sandoz			
Schering			
Squibb			
Upjohn			
Wallace			
Warner-Chilcott			
Wyeth			

10. Which of the following do you consider important as goals or objectives of your prescription dept. buying policy?
(Please rank only those factors which you consider to be important)

1 = most important
2 = second most important

- ___ a. Achieving a high stock turnover
___ b. Maintaining a minimal stock level
___ c. Achieving the lowest possible Cost of Goods Sold
___ d. Achieving the lowest possible number of Stockouts
___ e. Other (please specify) _____
___ f. Don't know

11. Please indicate the Total Sales volume for last year in your pharmacy.

- a. Less than \$50,000
b. \$50,000 to \$99,999
c. \$100,000 to \$149,999
d. \$150,000 to \$199,999
e. \$200,000 to \$249,999
f. \$250,000 to \$299,999
g. \$300,000 or more
h. Don't know

12. For the following generically-prescribed drugs, please indicate the manufacturer whose product was most often dispensed during the past year, and the major source for each generic drug in your pharmacy.

GENERIC DRUG	MANUFACTURER	MAJOR SOURCE	
		Direct from Mfr.	Wholesaler or Other
<u>Phenobarbital</u>			
<u>Tetracycline</u>			
<u>Penicillin G</u>			
<u>Thyroid</u>			
<u>Meprobamate</u>			
<u>Prednisone</u>			
<u>Reserpine</u>			

13. How many years have you been engaged in the retail practice of pharmacy? _____

Supplemental Questionnaire

"Informal Group Purchasing"

(To be completed if the response to question 4 was "yes")

1. How many "informal prescription drug buying groups" do you participate in? (Informal Group: An informal group is comprised of a number of pharmacies who generally combine their orders whenever "pooled" ordering is done.)
- ___ a. none
 ___ b. one
 ___ c. two or more

For each Informal Group to which you belong, please answer the following questions:

2. How many retail pharmacies participate in each informal group? (including your pharmacy)

<u>Group 1</u>	<u>Group 2</u>
_____	_____

3. How frequently does this group(s) order collectively?

	<u>Group 1</u>	<u>Group 2</u>
a. Once or more per week	_____	_____
b. Once every 1 to 2 weeks	_____	_____
c. Once every 3 to 4 weeks	_____	_____
d. Once every 5 to 8 weeks	_____	_____
e. Once every 9 to 12 weeks	_____	_____
f. Once every 13 to 16 weeks	_____	_____
g. Once every 17 to 24 weeks	_____	_____
h. Once every 25 to 52 weeks	_____	_____
i. Less than once per year	_____	_____

4. Is this group(s) identified by a name or symbol?

	<u>Group 1</u>	<u>Group 2</u>
a. yes	_____	_____
b. no	_____	_____

5. Does this group(s) collectively own a warehouse or similar storage facility for merchandise purchased for group members?

	<u>Group 1</u>	<u>Group 2</u>
a. yes	_____	_____
b. no	_____	_____

APPENDIX B

VERIFICATION OF PHARMACY RESPONSES
REGARDING MAJOR SOURCES OF SUPPLY
UTILIZED FOR PRESCRIPTION
DRUG PURCHASES

An important purchasing pattern investigated was the percentage of prescription drug purchases made during the past year from major sources of supply (manufacturers and wholesalers). This information was obtained during personal interviews by asking pharmacy managers to recall or estimate the proportionate amount of purchases made from each source. Since a prescription department manager's ability to accurately relate this information had not been established, it was decided to empirically test the accuracy of pharmacist estimations. A sub-sample of five pharmacies was selected at random from the sample universe. Each pharmacy was interviewed using a prepared questionnaire (Appendix A) and was asked to estimate the proportionate amount of prescription drug purchases from each major source of supply. After the interview, each was asked to provide their past year's prescription drug purchase invoice records for inspection. These records were reviewed, and the actual percentage of prescription drug purchases made directly from each source was

determined. Estimates were then compared with the actual percentages determined from the invoice inspections (Table 1).

The comparison between the actual and estimated values indicated that the mean absolute error in estimating the percentage of purchases placed direct from manufacturers was 2.4 percent (see Table 1). Confidence intervals about the mean were calculated using the Student's "T" test statistic (29, p. 189-195). It was determined that the absolute error in estimating the percentage of prescription drug purchases placed directly from manufacturers would be no greater than 4.77 percent among the sample pharmacies 95 percent of the time.

The Student "T" test was also used to determine if there was any trend among sample pharmacies to overestimate or underestimate the actual proportion of purchases made directly from drug manufacturers. The test results indicated that there was insufficient evidence to indicate that any trend existed.

TABLE 1

ACTUAL AND ESTIMATED PERCENTAGE
OF PRESCRIPTION DRUG PURCHASES
MADE FROM DRUG MANUFACTURERS,
BY EACH OF FIVE SAMPLE
PHARMACIES

Pharmacy	Actual (percent)	Estimate (percent)	Absolute Error in Estimate (percent)
1	29.1	30	+ .9
2	51.2	45	-6.2
3	66.3	70	+3.7
4	39.3	40	+ .7
5	5.5	5	- .5
Average Absolute Error		2.4 percent	