



The Chain Saw Industry in 1974

After a long period of relative stability, the U.S. chain saw industry was experiencing rapid growth in early 1974, stimulated by increased consumer interest in chain saws as a result of the energy crisis, a trend toward self-sufficiency, and the back-to-nature movement. Long dominated by Homelite in the mass market and the German company Stihl in the premium segment, the industry faced other changes in the early 1970s. Two major companies had recently been acquired by large parents, and many other participants had taken a renewed interest in the industry because of its upsurge in growth.

The Product

Chain saws were motorized devices for cutting wood, and were sold to a wide range of industrial, commercial, and household buyers. There were two basic types of chain saws, which differed in the nature of their power unit (power head). Gas saws were free-standing units powered by an internal combustion engine of 2 to over 8 cubic inches of displacement. Electric saws utilized an electric motor, which was fed by a cable that had to be connected to an electrical socket. Domestic U.S. sales of chain saws over the 1949–1973 period are outlined in **Table A**.¹

Exhibit 1 shows a typical chain saw and identifies its major parts. Besides the power head, chain saws differed in two important dimensions. The horsepower of the power head varied from 1.5 to approximately 8.5. More powerful saws were designed for heavy-duty uses such as logging and construction; less powerful saws were sufficient for a homeowner to cut firewood and do light clearing of land. Chain saws also differed in the length of their cutting bars (from 10 to over 24 inches); long-bar saws were designed, by and large, for heavy-duty applications.

¹The U.S. market for chain saws was approximately as large as that of all the rest of the world.

This case was written by Associate Professor Michael E. Porter with the assistance of David Collis, James DeBelina, Jon Elsassner, James Hornthal, and R. Gordon Shearer, all MBAs '78; and Susan Mayer, MBA '79. It is based on published sources and interviews with industry participants, distributors, retailers, suppliers, and observers. The case was written as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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Table A Domestic Chain Saw Sales, 1949–1973 (thousands of units)

<i>Year</i>	<i>Gas Saws</i>	<i>Electric Saws</i>	<i>Total Saws</i>
1949	40		40
1950	60		60
1951	95		95
1952	111		111
1953	150		150
1954	220		220
1955	248		248
1956	277		277
1957	248		248
1958	321		321
1959	363		363
1960	340		340
1961	340		340
1962	375		375
1963	381		381
1964	453		453
1965	501		501
1966	515		515
1967	518		518
1968	554		554
1969	613		613
1970	633	na	633+
1971	750	na	750+
1972	899	175	1,074
1973	1,400	312	1,712

Source: Manufacturer interviews; for pre-1972 data, Walter J. Williams, "The United States Chain Saw Market," unpublished manuscript, Amos Tuck School, Dartmouth College.

Note: Sales of electric saws were very small before 1970.

These differences translated into a wide variety of chain saw models, with some manufacturers producing over 20 different saws. Prices for chain saws reflected this broad range of products (based on number of units in the price segment):

Retail Price Segmentation

	1970	1971	1972
< \$140	12%	20%	22%
140–170	<u>12</u>	<u>27</u>	<u>26</u>
	24	47	48
170–300 } 300–700 }	<u>76</u>	49	47
	<u>4</u>	<u>5</u>	
	100%	100%	100%

Source: Chain Saw Manufacturers Association; dealer and manufacturer interviews.

Chain saws had a useful life of approximately five years of regular use.

Markets

Industry participants had traditionally segmented end users of chain saws into three categories: professional, farmer, and occasional or "casual." *Professionals* used chain saws as one of the primary tools of their trades. Along with professional loggers, the *pro* segment included commercial and government buyers—such as building contractors, municipal employees, and local park district workers—who used chain saws as auxiliary tools. Industry sources estimated that the great majority of pro users purchased saws with cubic-inch displacements of 4.5 or greater.

Farmers used chain saws for a variety of activities on their land, as shown in the following 1972 survey. Farmers generally purchased saws in the 2.7-cubic-inch to 4.5-cubic-inch displacement range, although some purchased even larger saws.

Farm Uses of Chain Saws

Specific Use	% of Survey Respondents Reporting Use
Tree maintenance	54.1
Land clearing	49.8
Fence posts	49.4
Firewood cutting	28.8
Timber	26.2
Pulpwood	1.3

Source: *Kansas Farmer*

Both pro and farm users tended to employ chain saws heavily and require regular service and repair. They were also frequent purchasers of replacement chain.

The term *casual users* referred to homeowners or campers who used chain saws for cutting firewood, trimming trees, pruning, or clearing storm damage. The casual users were a very diverse group with a wide variety of needs, and their saw usage rates varied accordingly.

Casual Uses of Chain Saws

Primary Use	% of Casual-User Market
Fireplace (occasional wood cutting)	60–70
Home heating (heavy user)	10–15
Camping	10–15
Suburban acreage (light clearing work)	5–10
Nonuser (gift, etc., put immediately on the shelf)	5–10

Source: Manufacturer and distributor interviews

Not infrequently, the casual user's need for a chain saw was very transitory, such as a one-time tree-clearing project. After this use the saw might be used very lightly if at all. Other casual users were *regular* users of saws.

Most casual-user saws were estimated to have power heads with less than 2.7-cubic-inch displacement and bar lengths of less than 16 inches. Most casual users purchased saws that cost less than \$200:

Chain Saws Sales to Market Segments

Cost	% Sold to	
	Farm and Professional Users	Casual Users
< \$100	3	23
100–200	7	67
200–250	33	8
250 or more	<u>57</u>	<u>2</u>
	100%	100%

Source: Chain Saw Manufacturers Association; manufacturer interviews.

The estimated breakdown of unit sales of gas chain saws by the domestic end-user segment was as follows:

	Units in Thousands	
	1972	1973
Professional	259	315
Farmer	210	282
Casual user	<u>430</u>	<u>803</u>
Total	899	1,400

Source: Chain Saw Manufacturers Association; manufacturer interviews.

Once purchasers of chain saws became regular users, they tended to trade up to saws with either more power or more features. Chain saws in regular use required service, repairs, and the purchase of replacement saw chain. Professional users consumed approximately 5–30 seven- to eight-foot loops of saw chain per year, and farmers typically used 3–5 four- to eight-foot loops if they were regular saw users. Pro and farm users also typically replaced the guide bar two to three times and the sprocket three to five times over the life of a saw. Usage of chain varied markedly in the casual-user segment, and there was little reliable evidence of how much chain the average casual user consumed, though it was believed to be less than one four-foot loop per year. A four-foot loop of replacement chain cost approximately \$10, and bars and sprockets were somewhat more expensive; costs varied by size and manufacturer.

Although the pro and farmer segments had long been the dominant markets for chain saws and still dominated the market in terms of dollar sales because of their much higher average prices, the casual-user segment had begun to grow rapidly. Before 1963 gas saws were sold almost exclusively to professional woodcutters. That year a leading competitor, Homelite, introduced its lightweight XL-12 saw, priced under \$200; McCulloch soon followed with a similar model. The unprecedented combination of light weight and low price was cited by observers as stimulating the birth of the casual-user market. Industry sources attributed the recent spurt in casual-user sales to a number of factors, among them increased usage of fireplaces and wood-burning stoves as a result of the energy crisis, social trends emphasizing a return to nature and escape from urban living, ownership of second homes, and increased leisure time—all concurrent with wider availability of lower-priced saws, some costing less than \$100.

The casual-user market was expected to continue to grow rapidly for at least the next five years. The pro and farmer segments were primarily replacement markets by 1974, though they were expected to grow at approximately 10% per year. Pro and farmer sales tended to be somewhat cyclical, in keeping with the cycles in their end-user industries.

Distribution

Chain saws reached end users through a complex array of two- and three-stage distribution channels. **Exhibit 2** gives a schematic diagram of chain saw distribution and indicates the most important channels in 1974.

Retail Channels

Servicing dealers. The servicing chain saw dealers were the most important retail channel in the chain saw market. They were full-service outlets carrying broad lines of chain saws and offering extensive purchasing assistance to customers. Some dealers sold only chain saws, but most were lawn and garden stores or building contractor supply outlets. Chain saw dealers were franchised to carry the brands of individual manufacturers, and approximately 25% of the dealers carried only one line. However, most dealers carried the product lines of more than one manufacturer; the average was approximately two lines per dealer. Multiple line dealers generally carried the line of only one of the two major manufacturers—Homelite or McCulloch—and identified themselves with one of these firms.

Approximately 45% of chain saw dealers were in rural areas, 35% in urban areas, and 20% in the suburbs. Dealers provided service, sold replacement chain and accessories, and had an average sales volume in chain saws and related products of \$150,000 to \$200,000 per year. Many were owned by former gasoline engine mechanics. Sales were seasonal and reached their highest levels in the summer months. Dealers advertised primarily through local newspapers and radio, and many manufacturers had cooperative advertising programs that shared advertising costs with dealers on a 50/50 basis. Dealer margins for chain saws ranged from 20% to 40%, with margins on service and accessories significantly higher. Margins were lowest on the lower-priced saws, and some dealers claimed to sell saws at or near cost and make their profit on service and accessories.

Other retail channels for chain saws were as follows:

Lumber and home centers. Both independent and chain lumber and home center stores catered to homeowners and contractors. These outlets offered a limited line of saws without service and with limited accessories. These stores sometimes bought saws direct from manufacturers, but they usually bought through distributors. Chain saws were not a major item for these outlets in 1974.

Department stores. Major department stores sold chain saws, particularly the large national chains (Sears, Montgomery Ward, and J. C. Penney). Some of the smaller department stores carried chain saws, but they offered relatively few models and little or no service. The three large chains were major outlets for saws, and all sold fairly full lines of saws and accessories. They did not carry expensive, high-quality saws because of the difficulty of selling them. Sears and Ward's had their own service; Penney's referred customers to the nearest manufacturer-authorized service center. All three offered credit, which was an effective marketing tool that many other channels for chain saws did not have. The three leading chains as well as some other department stores had significant catalog sales of chain saws as well as over-the-counter sales. The Big 3 sold an estimated 20–30% of their saws through catalog operations.

The major department store chains sold both private label and brand name saws, purchased directly from manufacturers in large volumes. Total sales of chain saws to the top three chains were estimated at several hundred thousand units in 1973. Sears and Ward's sold only private label saws; Penney's sold brand name saws, though it had sold private label saws in the past. Ward's and especially Sears required their suppliers to redesign products to give them distinctive lines.

Farm stores. Both independent and chain farm stores supplied farmers with a wide line of farm products including feed, equipment, and fertilizer. Examples of farm store chains included Agway

(500 stores), Tractor Supply (250 stores), and Quality Farm and Fleet (23 stores). Most farm stores carried a full line of chain saws and accessories, purchased either direct from the manufacturer or through distributors. Some of the chains handled private label as well as several lines of branded saws. Independent farm stores usually offered service on chain saws, and these outlets resembled chain saw dealers. Farm store chains were much less likely to offer service. Farm stores were concentrated in the West and Midwest and sold to professionals and casual users as well as to their primary customers—farmers. Sales of chain saws in these outlets were growing, but more slowly than the market as a whole.

Hardware stores. Both local independent stores and chains that carried full lines of hardware products offered relatively wide lines of saws, including those of several competing manufacturers. Many offered service and a full line of accessories for the saws, but generally their service was limited in scope, compared with that of chain saw dealers. Hardware stores were characterized by a high level of customer purchase assistance.

Although hardware stores purchased from independent chain saw distributors, an important volume of their chain saws was purchased through wholesale hardware buying groups, such as HWI, American Hardware, Ace Hardware, and Cotter and Company. Chain saws represented a minor fraction of the sales of hardware stores, and hardware stores as a group represented less than 10% of chain saw sales in 1973.

Catalog sales. Aside from catalog sales through the major department stores, there were some very limited sales of chain saws through exclusively catalog firms such as Aldens. These firms typically carried models from many manufacturers, with their focus on smaller saws and related accessories. No service was offered, and customers were referred to the nearest service center.

In addition to these major channels for chain saws, some stores in two other kinds of outlets began adding chain saws to their lines. A few mass merchandisers such as K-Mart began carrying very limited lines of lower-priced chain saws with limited accessories and no service. They purchased direct from manufacturers. In addition, some of the major auto store chains such as Western Auto began limited sales of chain saws on essentially the same basis. These firms either bought direct or through cooperative buying groups.

The breakdown of dollar volume sold through retail channels in 1973 was approximately as follows:

Servicing dealers	50–65%
Department stores	20–25%
Farm stores	10–15%
Hardware stores	5–10%
Others	< 10%

Wholesale Channels

There were three types of wholesale channels for chain saws. By far the most important was *wholesale distributors* owned by or exclusively affiliated with the chain saw manufacturers. Most manufacturers had between 20 and 50 distributors who sold to various types of retail dealers. In a few cases the distributors sold direct to large professional or industrial end users.

In addition to regular chain saw distributors, catalog distributors and dealer cooperatives (or buying groups) were involved in wholesaling chain saws. *Catalog dealers* purchased saws direct from manufacturers and resold them to smaller distributors who did not specialize in chain saws. The *buying groups* were retailers banded together to secure favorable purchasing terms from manufacturers. These were most important in hardware stores.

Manufacturing

Chain saw manufacturing involved a complex assembly operation using a variety of fabricated parts. Parts could be divided into two major categories: those relating to the power head, and attachments (bar, chain, and sprocket). Parts fabrication included machining, die casting, forging, heat treatment, plating, and metal-stamping operations. Of these, die casting involved the most significant investment and degree of difficulty and required extremely close tolerances. **Exhibit 3** lists the major parts of a chain saw along with an estimate of the percentage of total cost represented by each part for a gas chain saw model with annual production volume of 100,000 units. There were economies of scale in the production of most significant components of the saw. Cost savings were also achieved through automation, particularly in machining and assembly. The total tooling investment required to produce all these parts (except saw chain, guide bars, and sprockets) for a chain saw model was estimated at approximately \$300,000–500,000 in 1972.

Chain saw manufacturers varied greatly in their levels of vertical integration; the manufacturer represented in **Exhibit 3** had approximately an average level of integration. The very largest manufacturers were almost completely integrated, though they usually purchased some saw chain, bars, and other specialized parts. Saw chain and bar manufacture required significant investment and involved quite sophisticated and often proprietary technology that had been mastered by specialist outside suppliers. Medium-sized firms purchased attachments as well as die castings and sometimes forgings, but did most of their own machining and then assembly. Some very small manufacturers were solely assembly operations.

Industry participants believed that integration lowered unit costs if the volume of parts produced internally was large, relative to volumes produced by specialist outside suppliers. Specialized suppliers existed for all the major chain saw components, and many had been supplying the industry for decades. In carburetors, for example, specialized outside suppliers had such great annual and accumulated volumes that no chain saw manufacturer produced carburetors in-house.

An approximate breakdown of costs for a typical chain saw manufacturer was as follows:

Purchased parts and material	45–70%
Direct labor	7–10%
Indirect labor and overhead	24–40%

Source: Estimates based on manufacturer and supplier interviews.

It was estimated that an efficient, highly integrated chain saw manufacturing facility with two production lines required a capital investment in excess of \$15 million for a productive capacity of 600 saws per day. A less integrated plant had a lower minimum efficient scale and significantly lower capital cost.

The Electric Chain Saw Market

A number of characteristics made electric chain saws quite different from gas saws. The majority of electric saws sold for less than \$50 and were capable of only low horsepower levels.² Horsepower of electric saws was inherently limited by the amperage capacity of conventional electrical wiring.

Electric saws were sold primarily to the construction market, where the flammability of gasoline posed a safety hazard, and to casual users, who had very low power requirements. Average casual purchasers of electric saws were generally believed to differ somewhat from casual gas saw

²For a customer who did not already have one, the cost of a long heavy-duty extension cord added \$10–20 to the cost of an electric saw.

buyers in 1974. Electric saw purchasers were believed to be extremely price sensitive and in some cases also less "outdoorsy" and less comfortable tinkering with gasoline engines. Some observers also noted that electric saws were often purchased by women as gifts. Distribution of electric saws was primarily through contractor supply outlets, hardware chains, and home centers as part of the electric tool line. Almost no electric saws were sold through servicing dealers, who had little expertise in electric motor repair. Electric saws required little service, partly because of the reliability of electric motors and also because they were used less intensively than gas saws.

Competition

There were approximately a dozen major manufacturers of gasoline chain saws in 1974. Some of these also produced electric saws, but the markets for gas and electric saws were quite distinct. There were major competitors in electric saws who did not produce gas saws, and vice versa. The major firms and their estimated positions in the gas chain saw market are shown in **Table B**.

Stihl and Solo were German companies; Jonsereds, Husqvarna, and Partner were based in Sweden; Echo was based in Japan; and Pioneer was a Canadian firm. Each was a significant producer outside the United States.³

Table B Estimated U.S. Market Shares of Gas Chain Saw Manufacturers

	1970	1971	1972	1973
Homelite	35%	31%	28%	28%
McCulloch	33	33	27	27
Remington/Desa			8	12
Beaird-Poulan			8	12
Stihl			7-8	6
Roper			6	
Pioneer			4	
Skil			3	
Echo (entered 1972)			1	
Very small shares:				
Husqvarna, Jonsereds,				
Partner, Solo				

Source: Manufacturer interviews

Note: Omitted figures were not available.

European firms had been the early pioneers in the chain saw industry, and they still maintained technological leadership according to most observers. The other major competitors were U.S. firms, which had grown up largely since World War II. Homelite and McCulloch sold outside the United States as well as domestically, exporting 10–20% of their volume; the other U.S. companies were largely domestic competitors only. Stihl had a relatively small but stable share in the United States, and Echo had entered the U.S. market in 1972. The other non-U.S. firms had very small shares in the U.S. market, which they met exclusively through exports. Tariffs on chain saws were significant in the United States as in other countries; they ranged from 5% to 15%.

³In addition to the non-U.S. firms listed, a number of other producers—such as Danarm, Dolmar, and Alpina—exported minor volumes to the United States. None were considered significant factors in the market.

The estimated 1972 domestic dollar sales of chain saws of the leading U.S. firms were as follows:

	<i>\$ millions</i>
Homelite	\$30
McCulloch	30
Remington/Desa	11
Beaird-Poulan	9
Roper	6
Pioneer	4
Skil	3

A profile of each of the major competitors is given below. **Exhibit 4** summarizes their product lines, **Exhibit 5** their prices, **Exhibit 6** their advertising spending, and **Exhibit 7** their corporate financial results.

Homelite

Homelite, a division of Textron, Inc., was acquired in 1955. Textron had over 30 divisions in many diverse businesses overseen by a corporate staff of less than 100 people and classified as shown in **Table C**.

Divisions were managed autonomously, but measured and compensated on the basis of strict annual return-on-investment criteria. A group vice president monitored division results and consulted on major decisions, but did not interfere with operations. Corporate 10-year targets were growth at an average compound rate of 8% and net income growth at a compound rate of 10%.

Homelite, a leader in the U.S. chain saw industry for many years, was one of Textron's most successful divisions, though its market share had begun declining slightly. The division, part of Textron's consumer segment, was one of the corporation's top profit contributors. In addition to chain saws, the Homelite Division produced lawn and garden equipment, snow blowers, and some construction equipment, such as pumps and generators. Although chain saws were by far the largest part of division sales, Homelite's other businesses were being expanded through new product introductions.

Table C Sales and Net Income of Textron by Business Segments (\$ in millions)

	1973		1972	
	<i>Sales</i>	<i>Net Income</i>	<i>Sales</i>	<i>Net Income</i>
Consumer	\$614.1	\$29.4	\$557.4	\$26.1
Aerospace	499.0	23.4	505.9	27.2
Industrial	392.6	21.1	335.9	10.3
Metal products	352.7	20.3	279.2	8.5

Homelite produced a very wide product line in chain saws, with a large number of models and engine sizes. It sought to provide a high-quality product, which was marketed to all the major market segments through an extensive network of servicing dealers. Homelite sought to segment the market and offer saws aimed at all significant customer groups. Separate marketing managers directed activities in the consumer and professional markets. Homelite had been a pioneer in producing lightweight chain saws in the 1960s, but in 1973 its products were not known as leaders in safety and comfort features.

Homelite's policy of in-house distribution was unique in the industry. It had over 40 in-house distributors, who served over 10,000 authorized dealers. Homelite was particularly strong in hardware stores and farm stores; it also sold its brand of saws to J. C. Penney. Homelite did not sell through mass merchandisers or for private label. The company spent heavily on advertising—including some consumer advertising of the Homelite brand name—using television, magazine, and radio, as well as dealer-oriented advertising and advertising directed toward farmers. Homelite also utilized occasional price promotions on selected models.

Homelite manufactured chain saws in two plants in North and South Carolina, constructed in 1957 and 1959. Homelite was not integrated into die casting, but it manufactured its own bars and purchased saw chain from its sister division, Townsend, which manufactured precision metal parts. Townsend had entered saw chain manufacturing in 1971 in a South Carolina facility.

McCulloch Corporation

McCulloch, long a highly regarded manufacturer of chain saws and other products using small, two-cycle gasoline engines, was considered a pioneer in the U.S. chain saw industry. Until 1973 McCulloch was privately held, and its chairman, Robert McCulloch, was also chairman of McCulloch Oil. He had long been heavily involved in R&D and had designed products ranging from electronic ball cups for golf greens to diesel aircraft engines. Robert McCulloch also gained some notoriety for being instrumental in moving London Bridge to Arizona, and he also shifted some McCulloch chain saw operations to Arizona to provide an employment base there. Robert McCulloch had made several attempts in the previous decade to diversify the company into other areas. Ventures in outboard motors, snowmobile engines, and other products proved unsuccessful, however. By 1973 McCulloch was in serious financial difficulty (in part because of some bad real estate ventures), even though its overall sales had grown from \$41 million in 1963 to \$75 million in 1973. Top management attention to the chain saw business had lagged.

McCulloch was acquired by Black & Decker in September 1973. The acquisition was immediately challenged by the U.S. Justice Department, and the matter was pending in early 1974. Black & Decker had been actively seeking entry into new markets from its strong base in power tools. Its business in 1974 was divided approximately as follows:⁴

U.S. power tools	35%
International power tools	50%
McCulloch	15%

Black & Decker had approximately a 40–45% market share in the power tool industry—well ahead of Sears (with an estimated 25%) and Skil Corporation (with an estimated 8–10%). The power tool market in the United States was mature, with an estimated growth rate of 5–8% per year. Black & Decker was known for extremely strong financial controls, a cost-conscious manufacturing orientation, and a product policy which ruthlessly weeded out less profitable lines. The company was known to have used the Boston Consulting Group for strategic advice and had followed an aggressive strategy.

McCulloch offered a wide line of chain saws, which it sold through a large network of servicing dealers to all the major market segments. It had over 25 distributors nationwide, three of which were company owned, and approximately 8,000–10,000 dealers. McCulloch began selling to mass merchandisers in 1973; it was the only major manufacturer to do so. Its market share had been increasing until then as a result of its leadership in introducing lighter, less expensive chain saws, but its position in the professional segment had been eroding. McCulloch was a technological leader in manufacturing techniques for chain saws.

⁴William P. Maloney, "An Analysis of Black & Decker Manufacturing Company," C. S. McKee and Company.

McCulloch had a relatively integrated manufacturing facility in Los Angeles, California, which produced its own die castings and bars and had been in operation for many years. Chain saw manufacturing operations were being gradually moved to the new plant in Arizona.

Desa Industries (Remington)

The chain saw division of Desa Industries was a unit of Remington Arms until its sale in August 1969. Desa was a mini-conglomerate which purchased troubled companies, and Remington was in that category when Desa bought it. In 1973 Desa was known to be in serious financial difficulty and short of capital.

Chain saws were sold under the Remington name, which included a moderately wide line of saws. A major portion of Remington's output went to Montgomery Ward and John Deere under private label, and most of the rest was sold to other large chain accounts through a sales force of 35 manufacturers' reps (who represented other noncompeting manufacturers). Remington had little penetration of servicing dealers. It had a relatively strong position in electric chain saws.

Most observers regarded Remington's manufacturing facility as less efficient than those of the industry leaders. It had a very low level of vertical integration and little automation or use of special-purpose machinery.

Beaird-Poulan

Based in Louisiana, Beaird-Poulan was an independent manufacturer of chain saws until its acquisition by Emerson Electric in 1972. Emerson, with 1973 sales of \$937 million, had over 20 divisions producing a wide range of consumer and industrial products, classified into commercial and industrial components and systems, consumer goods (including chain saws), and government and defense products (see **Table D**).

Many of Emerson's products were in the electrical and electromechanical area, such as electric motors; controls; drives; and heating, ventilating, and air conditioning equipment. Emerson divisions were managed with considerable autonomy, but were measured on growth and return on invested capital. Corporate targets were 15% growth in sales annually, with return on invested capital of at least 20%. Emerson placed extremely strong emphasis on planning and setting detailed objectives; it also stressed cost reduction, which was termed a "way of life" at Emerson in official statements. Incentive payments based on performance could be a large part of division management compensation. Emerson had an annual cost reduction program with specific cost reduction goals at each division. The company had a stated goal of being the low-cost producer in each of its markets. Divisions that could not meet Emerson's goals were divested.

Table D Sales and Net Income of Emerson Electric by Business Segments (\$ in millions)

	1973		1972	
	<i>Sales</i>	<i>Net Income</i>	<i>Sales</i>	<i>Net Income</i>
Commercial and industrial	\$610.4	\$54.3	\$499.0	\$44.0
Consumer	317.9	21.0	290.0	22.3
Government and defense	20.7	0.6	21.1	0.6
Intercompany sales	(11.4)		(12.2)	

Beaird-Poulan offered a moderately wide line of chain saws; these were sold primarily to the private label market and, to a lesser extent, under the Poulan brand, to large accounts. Beaird-Poulan products were of acceptable but not premium quality and were sold at low prices. The company had put little emphasis on safety features or product innovation. Aside from low-priced saws, Beaird-Poulan had some strength in professional saws designed for pulpwood logging, which was practiced

heavily in the southeast United States. Beard-Poulan's major customers were Western Auto, Quality Farm and Fleet, John Deere, Sears, and other large chains. It had recently joined Roper as a private label supplier to Sears, for whom it made a small 1.9-cubic-inch saw. Beard-Poulan also had a network of servicing dealers, which accounted for less than 25% of sales. Poulan dealers, who numbered fewer than 3,000, were strongest in the South and were generally smaller and less established than Homelite or McCulloch dealers.

Beard-Poulan manufactured chain saws at a long-standing facility in Shreveport, Louisiana. It purchased most die castings, saw chain, and bars from outside suppliers.

Stihl

Stihl was the world's leading producer of chain saws in 1973. Correctly named Andreas Stihl Maschinenfabrik, Stihl was a privately controlled firm headquartered in Germany. It employed over 2,000 people in 1972 and had over 60% of the West German market. Stihl exported 80% of its production to over 100 countries, including approximately 70,000 units to the United States. Its worldwide corporate sales had been \$56 million in 1972 and had risen to \$124 million by 1974. Stihl had exported saws for sale in the United States for decades; it had also begun limited assembly of one model at a U.S. facility in Virginia in the fall of 1974.

Stihl produced a very wide line of premium-quality saws for sale primarily to the pro and farmer market segments. Its products were universally acknowledged as the quality standard of the industry, and Stihl had long offered safety and comfort features just coming to be introduced by U.S. firms.

Stihl sold its products only through servicing dealers, a policy to which it adhered strictly. Its dealer organization was large in relation to those of the other non-U.S. firms, and Stihl dealers were known to be particularly knowledgeable and loyal to Stihl. Industry observers readily admitted that Stihl's dealer organization was also first in quality of servicing. Stihl promoted heavily in the trade journals and at industry trade shows, stressing its leadership in the industry and its commitment to the servicing dealer.

Stihl manufactured most of its saws in Germany, though it also had a plant in Brazil in addition to the new U.S. assembly operation. Stihl was the most fully integrated chain saw manufacturer, producing all engine parts, most of its own bars and sprockets, and all of its saw chain. Stihl had also developed proprietary special machinery and processes for magnesium die casting of engine parts and for machining operations, and it had its own tooling group, which designed and manufactured the machinery used in Stihl production facilities. Observers characterized Stihl's production strategy as one of extremely high quality and relatively high cost. No sacrifices in quality were made in the interests of cost. Stihl saws were heavier than competitor saws for any given cubic-inch displacement and bar length. Stihl's new U.S. assembly facility assembled only its smallest 015 model saw, which was designed for casual users.

Roper Corporation

Roper Corporation had been a major supplier to Sears for over 40 years; Sears accounted for over half of Roper's sales. Roper supplied Sears with electric ranges, gas ranges, and other hard goods; Roper's Outdoor Products Company supplied Sears with chain saws. The Sears employee pension fund owned 40% of Roper's common stock.

Until 1971 Roper was the sole supplier of chain saws to Sears. Sears had worked with Roper over the years to develop competitive chain saws and to improve and update Roper's product line. In 1963, when Homelite introduced the XL-12 lightweight saw, Sears had pressured Roper to follow.

Roper then developed the new 3.7-cubic-inch engine for saws, which went on the market in 1968, and purchased the design for a 1.9-cubic-inch engine in 1969.

When Sears first bought saws from another supplier (Beaird-Poulan) in 1971, Roper began to think about selling saws to others. Until 1973 Roper's output went exclusively to Sears, but in that year the company began selling saws under its own brand name and to other private label accounts. Roper was making efforts to develop a servicing dealer network, though it had achieved little increase in its network by early 1974.

The Roper product line was limited and focused on the middle horsepower range, reflecting its heavy emphasis on Sears. Roper had little or no brand recognition. Its products were serviced by Sears's service organization. In 1973 Roper established a new chain saw production facility in Nogales, Mexico, which replaced its Illinois facility and increased capacity 100%.⁵

Pioneer

Pioneer was a Canadian firm that was acquired by the Outboard Marine Corporation (OMC) in 1965. Pioneer's parent company produced marine outboard motors, lawn mowers, and other products; it had sales of \$472 million in 1973, with a return on equity of 16.3%. Chain saws represented 2.3% of OMC sales in 1973, or \$10.9 million.

Pioneer offered four models of chain saws primarily directed at farm and professional buyers. It sold exclusively through specialty chain saw dealers. Its market position in Canada was relatively stronger than in the United States, and it had a significant position and a well-developed dealer organization in Europe as well.

Skil Corporation

Skil was a major producer of power tools, with 1973 sales of \$107 million and an estimated market share in power tools of 8–10%. It distributed power tools through 300 distributors to 25,000 retail outlets, primarily in hardware and home improvement, and through 4,000 industrial distributors to a wide variety of industrial customers. Skil had 75 factory service centers nationwide and over 350 authorized service agents.

Skil had a small line of high-quality chain saws, both gas and electric, which were sold through its power tool distribution channels. Approximately 50% of Skil's outlets carried its chain saws. Its primary target market was contractors.

Kioritz Corporation (Echo)

Kioritz Corporation, a Japanese company, was one of the world's largest manufacturers of two-cycle gasoline engines and had a reputation as a high-quality engine producer. It sold its engines to OEMs and had a large share of the market for snowmobile motors. Echo also manufactured a successful line of gas-powered products, such as snow blowers, power scythes, and misters, for sale worldwide. Its products were sold under the Echo name. Kioritz's sales were in the \$20–40 million range.

Kioritz entered the U.S. chain saw market in 1972, using the Echo name. Echo's product line was initially composed of a relatively small number of models covering a wide horsepower range. Echo was aggressively seeking to build a servicing dealer network by offering high dealer margins, but it still had a very small network in early 1974. It was also pursuing private label sales. Private label saws made up a major portion of Echo's sales in 1974, and were distributed through John

⁵Tariffs for importing chain saws into the United States from Mexico were nominal.

Deere's network of farm equipment stores. Echo was known to be trying to sell saws to Sears and Montgomery Ward; it had sold to Sears in 1973 when Beard-Poulan could not manufacture enough 1.9-cubic-inch saws to meet demand. Echo saws were manufactured in Japan.

Husqvarna

Husqvarna was a Swedish firm which exported chain saws for sale in the United States. It also produced a variety of other products, including refrigerators, motorcycles, sewing machines, and lawn mowers. Chain saws represented approximately 20% of its total worldwide revenues of approximately \$140 million. Husqvarna had recently been in financial difficulty because of the soaring wage and benefit costs prevalent in Swedish industry.

Husqvarna sold premium-quality chain saws at premium prices primarily to the pro and farmer market segments. It had a company-owned sales subsidiary in New Jersey and sold its products through five exclusive distributors to a network of servicing dealers. Its products were known for excellent safety features. Promotion was solely through trade publications.

Husqvarna manufactured all its saws in Sweden. It was not integrated into saw chain, bars, or engine castings.

Jonsereds

Jonsereds made the leading Swedish chain saw in terms of U.S. sales. The company was part of a large, privately held Swedish holding company about which information was scarce. Jonsereds's corporate sales were approximately \$30 million in 1973, and the company also produced woodworking machinery and tools and hydraulic loaders.

Jonsereds produced high-quality saws primarily for the pro and farmer market segments. It sold a relatively small number of models, though it covered a considerable horsepower range. (Swedish loggers generally used smaller saws than loggers in the United States.) Distribution for Jonsereds in the United States was handled by two companies: Tilton Equipment in the East and Scotsco in the West. Tilton was owned by two aggressive ex-Homelite salespeople and accounted for the great majority of Jonsereds's U.S. sales. It had four stocking locations. Jonsereds's saws were distributed to servicing dealers. The company had no marketing personnel of its own in the United States and promoted exclusively through the trade press.

Jonsereds manufactured all its saws in Sweden and was not integrated into bars or saw chain, which it purchased from Canadian and U.S. suppliers.

Partner

Partner was a Swedish firm with sales of approximately \$17 million in 1973; it produced chain saws and cutting machinery. It sold large, powerful saws primarily for the pro and farmer segments. It had no U.S. manufacturing or marketing facilities and sold saws in the United States through a small network of servicing dealers. Partner manufactured two large saws (3.4 and 4.0 cubic inches) for Skil, which rounded out Skil's product line. Skil, in turn, manufactured smaller saws used by Partner to round out its European product line.

Solo

Solo was a German firm which manufactured a range of gasoline-powered equipment including mopeds, misters, rototillers, and chain saws. It had sales of approximately \$25 million in 1973. Although Solo was one of the leading European manufacturers of small gasoline engines, rivaling Stihl, chain saws were not a major product for the company. Solo's chain saw product line

was quite similar in size and appearance to Stihl's, though Solo's line was narrower. Observers termed Solo's strategy "me too" with regard to Stihl.

Solo had no manufacturing or marketing subsidiary in the United States; it exported a small number of saws for sale through servicing dealers. Its European production operations were not integrated into the production of saw chain or bars.

Competition in Electric Chain Saws

The market for electric saws was quite distinct from the gas saw market. Skil, McCulloch, Homelite, and a number of other gas saw companies also produced electric saws, but Remington, Wen, and Singer dominated the electric chain saw market. Wen was an independent company producing a range of portable power tool products. Singer manufactured electric chain saws, along with a line of other electric tools, for Sears. Neither Wen nor Singer manufactured gas saws. Remington had the Montgomery Ward account for electric saws and also sold to other chains.

Exhibit 1 Diagram of a Gas Chain Saw

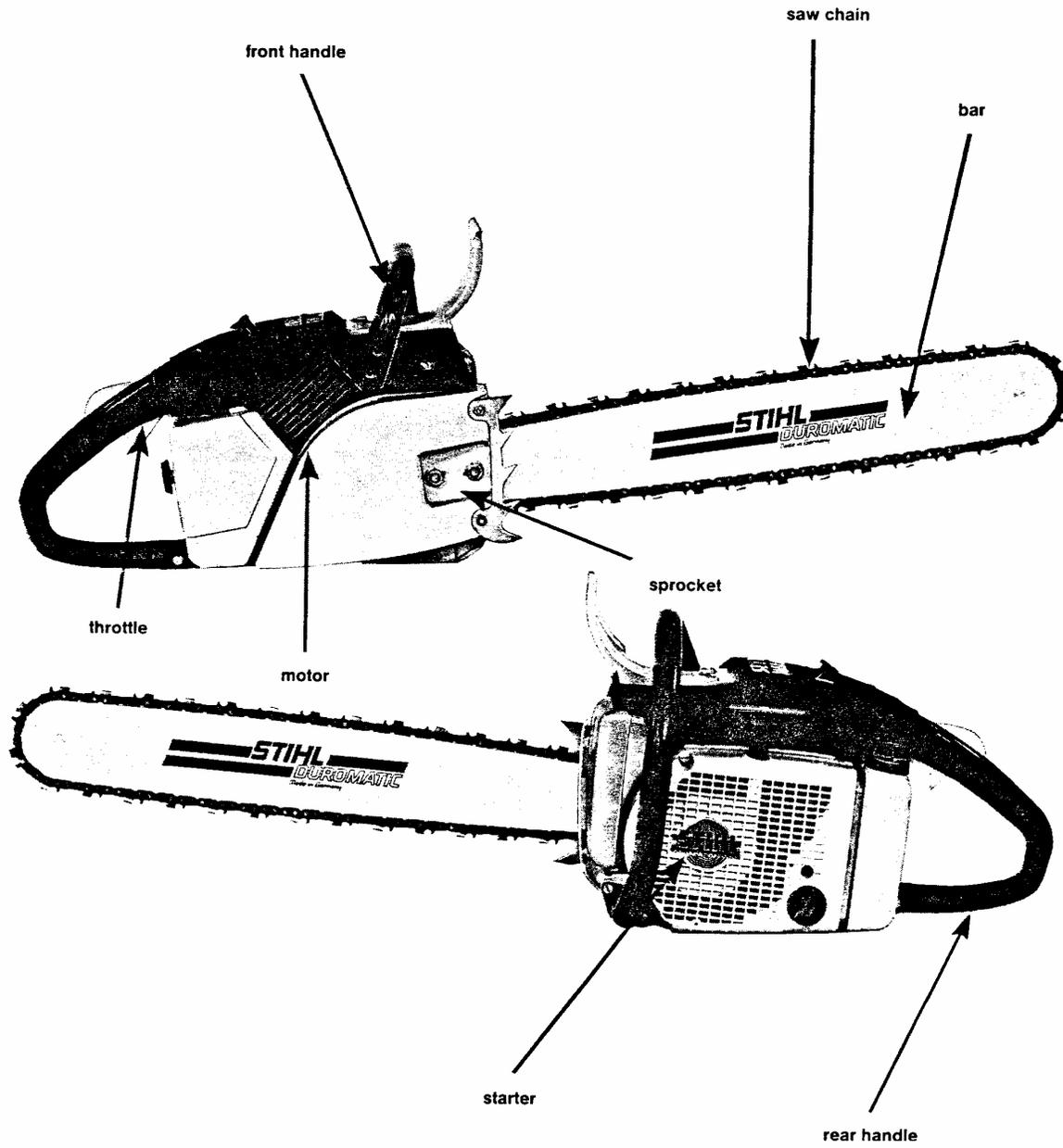
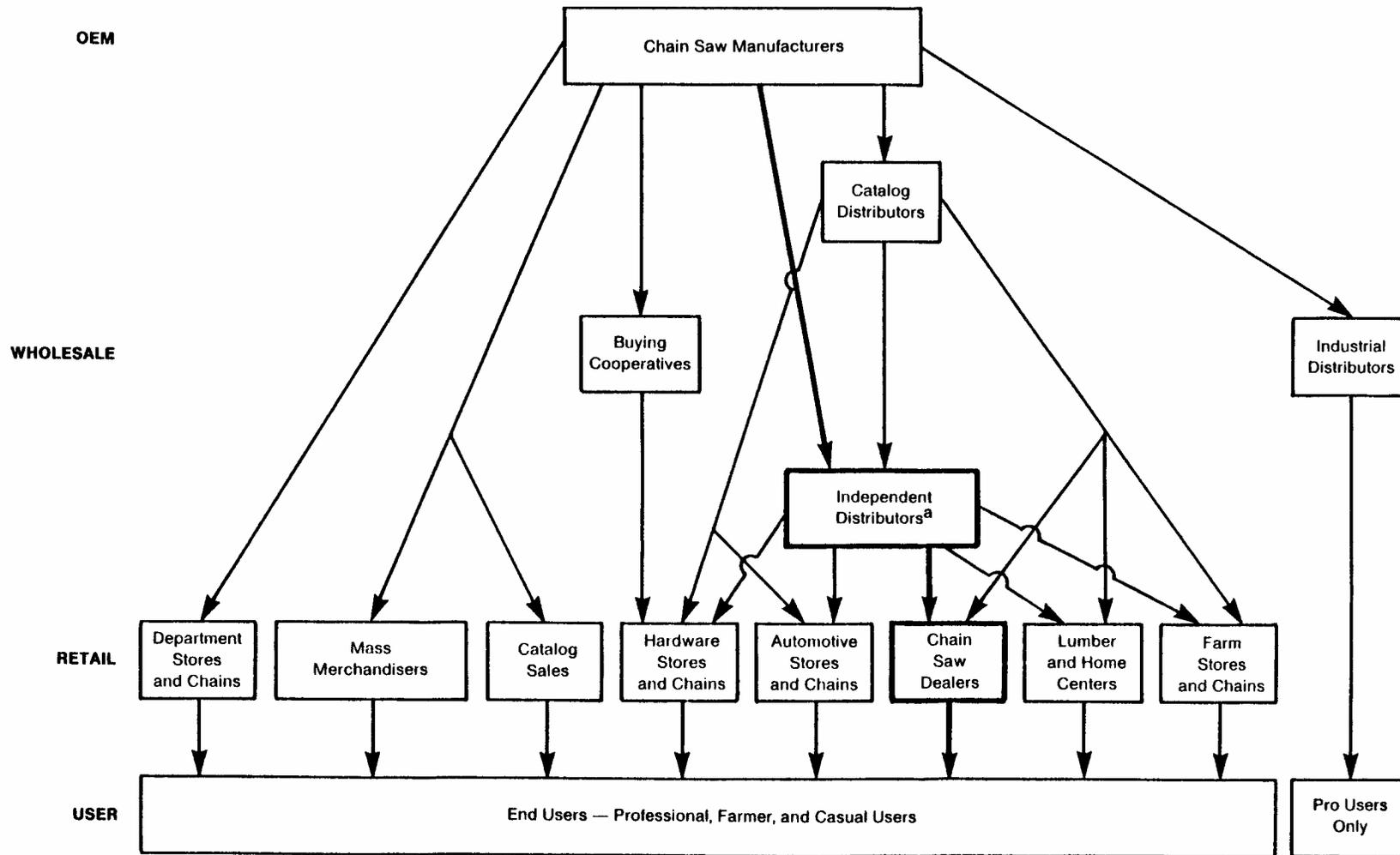


Exhibit 2 Distribution Channels for Chain Saws



Source: Manufacturer, distributor, and retail interviews.

Note: The bold lines indicate the most important distribution channel for chain saws in 1974.

a. Homelite had in-house distributors. It was the only manufacturer that did not use independent distributors.

Exhibit 3 Gas Chain Saw Manufacturing Costs

	<i>% of Unit Costs</i>
Purchased Parts	
Guide bar, saw chain, sprocket	16.1
Carburetor	6.0
Ignition	6.0
Starter	6.6
Clutch	1.1
Piston	<u>2.1</u>
Total purchased parts	37.9
Magnesium and Aluminum Die Castings	
Crankcase cover	4.5
Rear handle	1.1
Oil tank cover	1.1
Sprocket cover	0.6
Cylinder	<u>2.7</u>
Total die casting	10.0
Plastic Parts	
Various	3.1
Forgings	
Crankshaft	1.5
Connecting rod	0.8
Stampings	
Muffler, brackets, etc.	1.5
Bearings, Gaskets, Seals	
Various	3.2
Miscellaneous	<u>6.7</u>
Total material	64.7
Labor Costs	
Die-cast machining	2.7
Forging machining	2.8
Heat treatment	0.1
Chrome and copper plating	2.7
Subassembly ^a	1.6
Final assembly ^a	<u>4.0</u>
Total labor	13.9

Source: Testimony of Desa Industries, preliminary antitrust hearings against Black & Decker, 1972.

Note: These figures assume annual production volume of 100,000 units and average level of vertical integration for the industry.

a. May include some overhead.

Exhibit 4 Product Lines of Major Chain Saw Competitors

Company	Cubic Inch								
	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
Homelite ^a	x	x xx	x x x x x	xG xG x	xG xG xG	xG xG	x		
McCulloch ^a		x x x x x	x x x	xG x	xG x	xG x	x		
Stihl		xx xx	x x	xxG xx	x x	x	xG x		x
Beaird-Poulan ^a		x x	x x x	x x	xG x	xG x			
Jonsereds		xx xx	xx xx xx xx	x	x		x		
Husqvarna ^b									
Remington ^c		xx xx xx	x x	x	x x	x x			
Roper ^d		xx		xx xx					
Skil ^c		xx xx xx		x x					
Kloritz (Echo)		x	x	xx	x		x		
Sears ^c		x x x x x		x x x x					

x = gas chain saw model; X's aligned vertically are models with the same cubic-inch engine
 xG = gas chain saw with gear drive (for professionals)

Source: Company product literature and manufacturer and retailer interviews,
 a. One electric chain saw model
 b. Husqvarna data not available
 c. Three electric chain saw models
 d. Two electric chainsaw models

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Exhibit 5 Comparative Chain Saw Manufacturer Prices in 1972

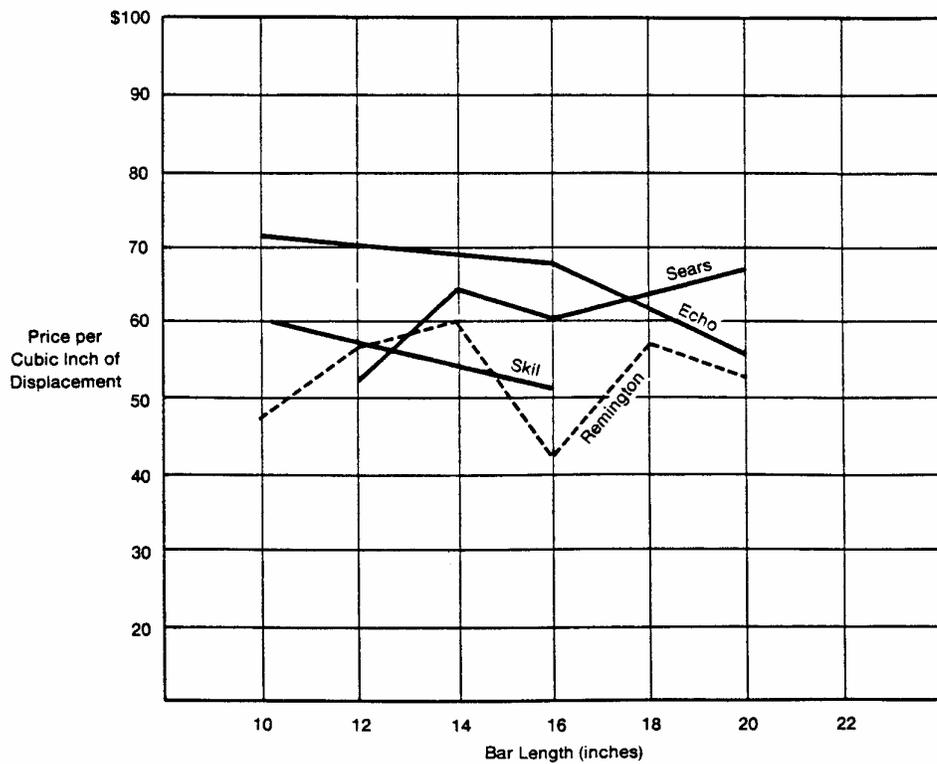
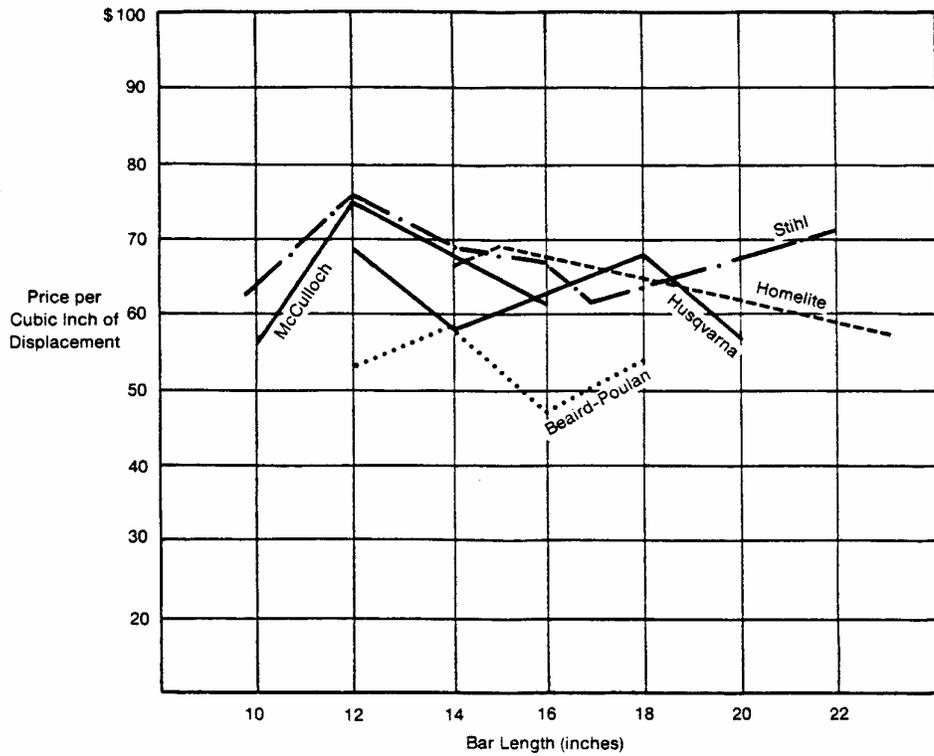


Exhibit 6 U.S. National Consumer Advertising of Chain Saws by Leading Manufacturers, 1969–1973 (\$ thousands)

	1969	1970	1971	1972	1973
Beaird-Poulan^a					
Total ^b	-	\$62.2	\$109.8	\$261.9	\$399.5
Magazines	-	59.6	76.4	166.9	121.9
Network television	-	-	-	48.2	238.3
Spot television	-	1.3	32.4	46.0	38.6
Desa Industries (Remington)					
Total	\$29.7	31.1	25.2	-	47.2
Magazines	29.7	30.1	24.8	-	46.0
Network television	-	-	-	-	-
Spot television	-	-	-	-	-
Husqvarna					
Total	-	-	-	-	-
Magazines	-	-	-	-	-
Network television	-	-	-	-	-
Spot television	-	-	-	-	-
Jonsereds					
Total	-	-	-	-	-
Magazines	-	-	-	-	-
Network television	-	-	-	-	-
Spot television	-	-	-	-	-
McCulloch^c					
Total	119.5	484.2	788.1	973.3	1,340.8
Magazines	119.5	176.6	114.0	109.5	238.1
Network television	-	-	-	456.8	743.7
Spot television	-	307.5	659.8	377.4	289.2
Roper					
Total	-	-	-	-	0.4
Magazines	-	-	-	-	-
Network television	-	-	-	-	-
Spot television	-	-	-	-	0.4
Stihl					
Total	92.2	49.6	93.6	167.7	329.7
Magazines	92.2	49.6	44.7	73.1	53.4
Network television	-	-	-	-	246.9
Spot television	-	-	48.9	93.9	29.0
Homelite (division of Textron)					
Total	825.5	864.5	1,288.2	958.7	1,025.9
Magazines	555.5	360.7	361.8	170.2	223.4
Network television	270.0	322.1	568.7	643.9	595.4
Spot television	-	168.7	338.8	141.2	164.2

Source: Leading National Advertisers, Inc., *National Advertising Investments*, January-December 1969, 1970, 1971, 1972, and 1973. Includes all firms spending \$25,000 or more on the combination of national magazines, network television, spot television, network radio, newspaper supplements, and outdoor advertising.

Note: Advertising figures are for advertising of chain saws only. The data omit cooperative advertising by retailers, the cost of which is shared with manufacturers. Cooperative advertising was significant in the industry; it was believed to be the highest as a percent of total advertising for pro-oriented firms such as Stihl. For Stihl, cooperative advertising was as much as 50% of total advertising.

a. Acquired by Emerson Electric in 1972

b. Total includes all other media

c. Acquired by Black & Decker Manufacturing Company in 1973

Exhibit 7 Selected Corporate Financial Information for Publicly Held Chain Saw Manufacturers, 1964-1973 (\$ in millions)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Textron										
(owned Homelite)										
Sales	\$720.2	\$851.0	\$1,113.2	\$1,445.0	\$1,704.1	\$1,682.2	\$1,611.9	\$1,603.7	\$1,678.4	\$1,858.4
% Sales—consumer products					24	26	27	31		
% Pretax—net income— consumer products					37	40	40	48		
Net income after taxes	\$22.1	\$29.1	\$43.9	\$61.5	\$74.0	\$76.1	\$66.7	\$71.8	\$82.1	\$100.8
Return on sales (ROS) %	3.1	3.4	3.9	4.2	4.3	4.5	4.1	4.5	4.9	5.4
Debt/Equity %	34.9	25.0	25.1	18.3	31.5	27.8	36.5	28.8	37.2	33.7
Return on equity (ROE) %	13.3	16.0	18.6	16.7	16.0	15.7	13.2	13.7	14.1	15.1
Capital expenditures	\$19.3	\$22.3	\$38.5	\$41.2	\$47.1	\$48.6	\$41.6	\$36.7	\$42.8	\$64.5
McCulloch Corporation										
(acquired by Black & Decker in 1973)										
Sales						\$45.4	\$43.2	\$50.6	\$58.9	\$73.1
% Chain saws									86	81.6
Net income						\$2.7	\$0.4	\$(4.4)	\$(0.6)	\$1.1
Market value of shares paid by Black & Decker										\$66.7 ^a
Black & Decker										
Sales	\$101.0	\$121.5	\$146.8	\$168.6	\$189.7	\$221.8	\$255.4	\$286.7	\$345.7	\$427.0
Net income	\$8.8	\$11.0	\$13.0	\$14.3	\$15.4	\$17.6	\$19.5	\$22.0	\$26.6	\$33.3
ROS %	8.7	9.1	8.9	8.5	8.1	7.9	7.6	7.7	7.7	7.8
Debt/Equity %	—	0.1	0.2	0.4	0.4	0.3	0.3	0.2	0.1	0.1
ROE %	15.8	18.1	19.2	19.0	18.4	19.0	18.4	16.3	15.7	17.0
Capital expenditures	—	\$6.8	\$9.7	\$10.7	\$5.6	\$7.7	\$16.7	\$16.1	\$20.1	\$29.2
Emerson Electric										
(owned Beard-Poulan)										
Sales	\$219.3	\$252.7	\$348.0	\$395.2	\$522.0	\$628.4	\$657.0	\$656.4	\$764.7	\$936.6
Sales of consumer products						\$217.8	\$239.7	\$254.1	\$290.0	\$317.9
Net income in consumer products						\$17.4	\$18.5	\$19.1	\$22.3	\$21.0
ROS—consumer products %						8.0	7.7	7.5	7.7	6.6
Net income	\$15.0	\$17.6	\$26.4	\$30.2	\$39.5	\$49.9	\$54.6	\$56.1	\$63.6	\$75.9
ROS %	6.8	7.0	7.6	7.7	7.6	7.9	8.3	8.6	8.3	8.1
Debt/Equity %	6.5	5.4	13.8	20.5	17.0	14.1	11.9	12.6	10.7	9.9
ROE %	15.2	16.1	18.3	18.7	18.2	17.8	17.3	16.6	16.5	17.0
Capital expenditures	\$6.3	\$9.4	\$17.1	\$12.2	\$19.4	\$23.9	\$20.5	\$21.4	\$26.6	\$40.8
Roper Corporation										
Sales	\$108.2	\$125.4	\$164.9	\$177.9	\$200.2	\$205.4	\$204.3	\$212.6	\$251.7	\$293.9
Net income	\$3.3	\$4.5	\$4.8	\$4.2	\$6.1	\$5.0	\$4.7	\$5.4	\$6.9	\$7.5
ROS %	3.0	3.6	2.9	2.4	3.0	2.4	2.3	2.5	2.7	2.6
Debt/Equity %	19.8	28.8	56.7	58.1	85.4	81.0	90.6	84.7	98.2	132.6
ROE %	10.5	13.1	10.6	8.8	11.2	8.6	7.8	8.4	9.7	9.8
Skil Corporation										
Sales	\$33.5	\$39.7	\$48.4	\$51.2	\$63.2	\$68.9	\$61.6	\$74.3	\$94.8	\$106.8
Net income	\$2.6	\$3.1	\$3.7	\$2.4	\$3.1	\$3.2	\$9	\$2.1	\$4.3	\$2.1
ROS %	7.8	7.8	7.6	4.7	4.9	4.6	1.5	2.8	4.5	2.0
Debt/Equity %		18.9	31.7	77.4	97.1	99.2	120.1	116.9	63.0	122.8
ROE %	15.4	16.7	17.8	11.1	13.0	12.4	3.7	7.7	12.1	5.8

a. Of this purchase price, \$39.4 million was represented by the value of McCulloch Oil shares acquired.