Chapter 4 | 1959 - 1969

Becoming a Comprehensive Home Appliance Manufacturer
Creating New Demand through Products

Demand for appliances boomed amid Japan's rapid economic growth. Besides TVs, Hayakawa Electric expanded into washing machines, refrigerators, and other products. It also began research into cutting-edge electronics, which led to numerous successes: mass production of microwave ovens and solar cells, and the world's first all-transistor diode calculator.

Harnessing the product appeal of color TVs and an increasingly advanced mass-production system, the company set up a series of sales companies overseas while boosting its export capabilities.

Pattern of the S-224, Sharp's first solar module

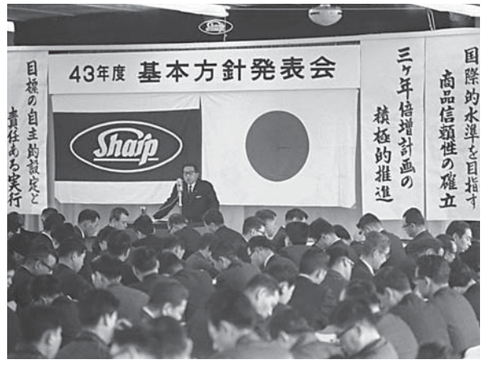
1 New Company-Wide Business Division System, Factory Expansion

Senior Executive Director Saeki Appointed

On May 10, 1958, Akira Saeki, for many years in charge of financial affairs at the company, was appointed to the highest management position of Senior Executive Director. It was hoped he could steer the company on a new course amid the volatile economy of that time.

He went on to enact numerous management reforms. The company took measures to expand its appliance lineup, began research into cutting-edge technologies, and started whole new product categories, including microwave ovens and calculators. It also focused on exports, as it set up sales companies in the US and other countries. With a careful eye on the business environment, Hayakawa Electric conducted capital investment and production plans, and deftly procured and adjusted financial resources. It also constantly strove to reduce costs, increase productivity, and boost profitability.

In June 1961, the company established the Hirano Division. In August 1963, it introduced a company-wide system of business divisions. Besides divisions for wireless products and appliances, the company launched a division for gas, cooking, and lighting products. Under the new system, each division was responsible for its own sales and profits. In May 1964, the company added a division for industrial equipment.



Senior Executive Director Saeki announces the company's first Basic Management Policy

On January 4, 1968, Hayakawa Electric held its first Basic Management Policy Presentation. Beyond merely explaining the company's management aims, this presentation analyzed the worldwide economic situation and industry trends, and it presented a clear company vision with measurable goals. Since 1968, the Basic Management Policy Presentation has rung in every new fiscal year at the company.

New Factories Built

As Hayakawa Electric expanded its operations, it built factories in new locations. The first step was to build a dedicated appliance factory in Takatori-cho (now Kitakamei-cho), Yao City, Osaka Prefecture; the aim was to have appliances account for 50% of the company's sales. In July 1959, the first building of the Yao Plant (originally called Hirano Plant No. 3) was completed. The facility boasted coating, plating, machining, and assembly capabilities. Particularly impressive was the totally automated plating factory, at that time said to be the most advanced in Asia. In October 1960, a refrigerator plant was completed. Around the same time, production lines were completed for water-cooled air conditioners, washing machines, fans, and oil heaters. Hayakawa Electric thus had the ability to manufacture numerous appliances in a single, comprehensive factory. By running its business utilizing such a comprehensive plant, the company could rapidly shift personnel and other management resources between sectors in response to changes in product demand. This ensured that the plant achieved optimal production levels and stable overall operation.

In June 1959, the company purchased land in Minosho-cho, Yamato-koriyama City, Nara Prefecture, where it built the Nara Plant (originally called the Yamato-koriyama Plant). While the new plant was being built, conveyor belts were installed in the previous building for the production of TV parts. In January 1960, Plant No. 1 was completed, and it began producing deflection coils, flyback transformers, and tuners for TVs, as well as radio parts. In 1962, the Nara Plant began producing voucher printers and commercial microwave ovens. In 1964, the company built a dedicated plant to strengthen production of industrial equipment. It also began mass production of the world's first all-transistor diode calculators and was now on its way to becoming a comprehensive electronics maker.

In May 1967, Hayakawa Electric completed the Hiroshima Plant in Isomatsu, Iida, Hachihonmatsu-cho, Kamo-gun, Hiroshima Prefecture (now Hachihonmatsu-iida, Higashi-hiroshima City). Built as a dedicated radio facility, it allowed the company to boost exports of transistor radios and was its first production base outside of Japan's Kansai region. It began production in June 1967, and added production of car radios and walkie-talkies as well. Of the approximately 1.62 million radios that the plant produced in fiscal 1968, about 90% were exported.

To meet burgeoning demand for color TVs, a large-scale dedicated plant (the Tochigi Plant) was built in Kibata, (now Hayakawa-cho), Yaita City, Tochigi Prefecture. Completed in March 1968, it began production in April of that year.

Thanks to the new plants in Hiroshima and Tochigi, the company's net sales went from approximately 42.08 billion yen in fiscal 1966 to 88.37 billion yen in fiscal 1968, while the number of employees jumped from about 8,200 to 13,900 over the same period.

As part of Hayakawa Electric's move to build dedicated plants, it renovated Hirano Plant No. 1 for the production of stereo systems, tape recorders, and other audio equipment. With completion of the first phase of renovation in June 1967, the plant took over the stereo division from the Tanabe Plant (Head Office). Full-scale operation began in November, following completion of the second phase of renovation.

Washing machine line at the Yao Plant (1959)

Parts line at the Nara Plant (1960)

The Hiroshima Plant, a dedicated radio factory (1967)

This long conveyer allowed the Tochigi Plant to turn out high-quality products extremely efficiently (1968)

2 Development of the Calculator

Young Engineers Drive the Company

Starting in late 1958, a group of young engineers would often get together after work to discuss business hurdles and their future dreams for the company. Not satisfied with current television technologies, they wanted to use their newfound knowledge and youthful sensibilities to advance the electronics industry.

One day about six months later, they had a chance to run their ideas past Senior Executive Director Saeki. They told him that the future lay in fields such as semiconductors, computers, microwaves, and ultrasound, and they suggested that the company focus its research there. It turned out that Saeki had himself long believed that the company would not grow if all it did was assemble products.

In September 1960, about 20 engineers in their mid-twenties were gathered as the founding staff of a research department dedicated to areas such as semiconductors and circuits. But despite the hopes and passion of these employees, the fact was that the company was sorely lacking in these technologies. Needing to learn the basics of computers, the calculator group from the circuit research lab spent their days at the offices of Hiroshi Ozaki (later to be an honorary advisor to the company) and Zen'ichi Kitamura of the School of Engineering at Osaka University.

This led to the company's development in July 1962 of the HAYAC-1, a small-scale electronic test computer. Two months later the company commercialized the CTS-1, a voucher printer utilizing a relay calculator.

Young engineers get together after work to discuss their concerns and hopes

The CS-10A, the world's first all-transistor diode electronic desktop calculator

World First: All-Transistor Diode Desktop Calculator

Long Struggle to Development Success

At the time, Japan's Ministry of International Trade and Industry (the forerunner of today's Ministry of Economy, Trade and Industry) had already begun a mainframe computer project with several Japanese electronics companies. Hayakawa Electric was not able to take part in this project. At any rate, mainframe computers did not fit the company's style of business: there was a limited market for the products, and they required the development of dedicated software. Hayakawa Electric instead used its strength in mass-produced products to focus on three areas: voucher printers, cash registers, and calculators. In calculators, the aim was to get users to switch to electronic models from the electric products mainly in use at the time. The company set to work developing a full-keyboard, 20-digit display desktop transistor calculator that would be quiet and fast yet would be about the same weight (approximately 20 kg) and price (approximately 500,000 yen) as electric models.

The first prototype failed to meet initial targets; its circuits took up a small room of approximately 7.4 m^2, and its market price would be more than 1.5 million yen.

To bring down the price, engineers adopted a mechanism that would hold the pressed number keys in the down position and use this as memory; this would reduce the number of transistors required. They also used inexpensive germanium transistors like those found in radios. To ensure stable quality, they used parts that had been subjected to high-temperature aging—a conditioning process that enabled parts to withstand wear and tear.

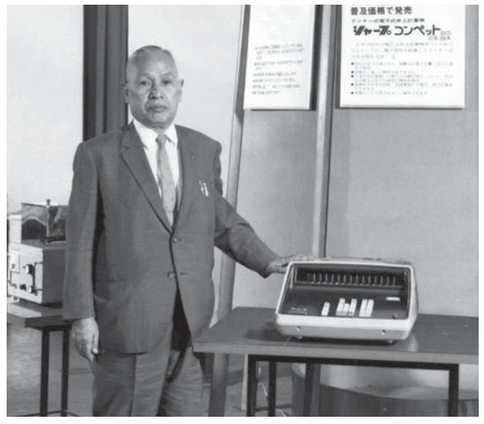
In March 1964, the company introduced the CS-10A Compet, the world's first all-transistor diode desktop calculator. It weighed 25 kg and sold for 535,000 yen—about the same price as a passenger car.

Second Calculator a Hit—The CS-20A

The price had to be reduced somehow. But by subjecting the transistors to aging and other stringent selection methods, there was a limit to what could be accomplished with mass production. Hayakawa Electric decided to adopt silicon transistors, and in 1965 it came out with the CS-20A, a numerical keypad calculator. It weighed 16 kg and sold for 379,000 yen.

Senior Executive Director Saeki was delighted with this calculator and for the next challenge he instructed his development team to make a calculator—an electronic abacus—that could be easily used in grocery stores. This goal became the roadmap for the increasingly smaller and more affordable calculators of the future.

The CS-20A was the center of attention at the 31st Business Show in Osaka in October 1965. In 1966, Sharp Electronics Corporation (SEC)—Hayakawa Electric's US sales subsidiary—began selling the CS-20A. The company was to achieve synergy through superior products and aggressive marketing so as to raise the Sharp brand image across the country.



President Hayakawa with the CS-20A

Calculators Use ICs, Then LSIs

The company strove to develop an "electronic abacus"—a personal-use calculator that was cheaper, lighter, and smaller. To make this dream a reality, the company decided to conduct joint research with a semiconductor manufacturer to develop ICs (integrated circuits), which were making dramatic progress in response to rapidly growing demand in the aerospace and arms industries in the US.

In 1966, the company developed the CS-31A, the world's first calculator to use bipolar ICs (28 ICs). The CS-31A was released and sold well. Eventually more than 70% of bipolar ICs produced would be used for calculators, and calculators were to be a major driver of Japan's semiconductor industry.

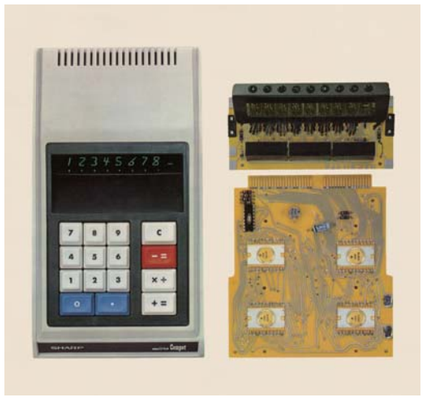
The quest for small, light calculators then began to focus on MOS (metal oxide semiconductor) ICs, which had higher density and consumed less power than previous ICs. But there was still no mass-production technology for MOS ICs and quality was still inconsistent. Furthermore, MOS ICs were easily broken due to static electricity, and they were difficult to assemble. Elaborate measures were taken to solve these problems: to prevent static electricity, humidity levels were raised in the factory, and line workers wore conductive wires on their wrists to ground themselves.

In 1968, after overcoming numerous hurdles, the company released the CS-16A, a calculator employing MOS ICs. Compared to the CS-10A, this product cost less than half (230,000 yen), weighed just one-sixth (4 kg), and was just one-third as large. The CS-16A sold well, and the company was one step closer to an electronic abacus—a true personal-use calculator.

The next semiconductor technology to emerge was the LSI (large-scale integrated circuit), which boasted far greater density and made possible much smaller products. But Japanese semiconductor companies were experiencing low yield ratios and so were unable to supply MOS LSIs for calculators.

The company thus turned to North American Rockwell Corporation for MOS LSIs, leading to the release in March 1969 of the QT-8D Micro Compet calculator. Small and light enough to fit in the palm of one's hand, the QT-8D was called "electronics technology born of the Apollo" in reference to North American Rockwell's participation in the American moon mission project.

The integrated circuits and LCD technologies that came out of the development of calculators formed the foundation of digital appliances and drove advancement of the future electronics industry.



The QT-8D, the world's first LSI calculator (left) and its substrate fitted with MOS LSI

3 Seeds of the Semiconductor Technology

Establishing the Central Research Laboratories

Hirano Plant No. 2 was completed in 1957, and Hayakawa Electric expanded from radios and TVs into electrical appliances. This prompted the company to boost its research capabilities by starting an R&D laboratory. In 1960, the R&D system was upgraded with the addition of labs for semiconductor and circuit research, leading to the establishment of the Electronic Device Research Division in 1961. This marked the company's foray into new electronics fields. (See page 4-03.)

In November 1961, the company completed construction of its long-awaited five-story reinforced-concrete Central Research Laboratories.

President Hayakawa described the role of the new facility. "Industry is moving towards electronics, a technology for the 21st century, and competition in our industry will focus on this new area. The Central Research Laboratories represent our strategy for coming out ahead of other companies."

In August 1963, the Central Research Laboratories were organized into divisions for semiconductors, electronic devices, medical electronics, and machining technology. The facility fostered next-generation technologies including light-emitting diodes, solar cells, computers, and microwave ovens, making it truly the fountain of Sharp technologies.

Research began on medical electronics equipment in 1960. Engineers specializing in medical equipment were invited to the company, and development was carried out in collaboration with medical institutions and trading companies. Developments included electric scalpels, electrocardiographs, and continuous intra-arterial infusion pumps. The ultrasonic washer developed in 1962 was at first used for washing medical instruments but was expanded for use with semiconductor elements, optical components, and gems and precious metals.

Conducting R&D at the Central Research Laboratories

Development of Solar Cells

Start of Solar Cell Research

The company acquired a 2.5 cm-diameter silicon wafer—a thin slab of monocrystalline silicon—which it used to trial solar cells in 1959. This was the beginning of the company's semiconductor business. First developed in 1954 in Bell Laboratories of the US, solar cells are elements that convert the sun's light energy directly into electricity.

In 1959, President Hayakawa, upon hearing of his company's successful solar cell trial, went to the laboratory himself and urged further research. The conversion efficiency (i.e., the percentage of light energy converted to electrical energy) at that time was still just 4% to 5%—still a long way from what was hoped for.

As the conversion efficiency rose above 10%, the company began searching for potential applications in places that could not easily obtain electricity, such as at sea and in the mountains. Light buoys and other marine applications had to withstand the rigors of seawater and harsh weather. In 1962, the company developed a tough yet highly transparent acrylic resin package for the S-224, the company's first standardized solar module. After being tested for a year at sea, it was adopted by the Japan Coast Guard.

Mass production of this standardized model began in 1963, and the following year a mass production line was built in the Nara Plant. The product went on to be installed in many marine applications, most notably in 1966 on the Ogami Island Lighthouse in Nagasaki Prefecture, Japan. This 225 W solar module was at the time the world's largest.

President Hayakawa had long said, "If we could find a way of generating electricity from limitless solar heat and light, that would benefit humankind to an extent we can scarcely imagine." The company had made a start in this direction by contributing to making marine traffic safer.

The Ogami Island Lighthouse is powered by Sharp solar (photo courtesy of Japan Coast Guard)

The Rise of Optoelectronics

The company also began developing optoelectronics products, which use solar cells as the optical sensors.

In 1970, the company developed products including a silicon blue cell for cameras and an optical sensor for ray guns used in game consoles.

Developing ELs, Laser Diodes, and LEDs

Light-Emitting EL Panels

Hayakawa Electric began development of EL (electroluminescence) in 1960. EL is known as "a light-emitting wall" since it gives off luminescence when an alternating current is applied to it. (At that time, EL was made of inorganic material, not organic material.)

In 1962, EL was in use for green indicators such as emergency exit signs in hotels and department stores, but it was still lacking in terms of brightness, stability, and service life. The company thus decided to first work on developing monocrystalline LEDs (light-emitting diodes) and laser diodes instead of polycrystalline EL.

Oscillation of Laser Diode Achieved

It was said that oscillation of laser diodes could be achieved by polishing the edge of the crystals of an infrared-emitting diode. As a first step toward this, the company began developing an infrared-emitting diode using gallium arsenide (GaAs) semiconductors. In 1966, infrared light was obtained by using an in-house electric furnace to make a basic monocrystalline material. That same year, the company began sample sales of infrared-emitting diodes that were used as the tape readers for electronic calculators.

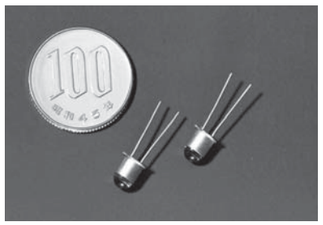
Research continued as the company achieved laser oscillation in liquid nitrogen. In 1968, this laser diode element was mounted on a rocket that went into outer space to observe cosmic dust.

Mass Production of Infrared Devices

The company raised the light-emitting efficiency of LEDs through a proprietary method called LPE (liquid phase epitaxial). In this method, p-n junctions* were built in unison with crystal growth. The acquisition of a patent for this technology allowed the company to leap far ahead of its rivals in the field of light-emitting elements.

In 1968, the company released products such as the GLE-502 gallium arsenide infrared-emitting diode, which achieved 20 to 50 times greater light emitting strength.

In 1970, the company released a gallium arsenide double LED that created visible green light by using a special fluorescent substance for a portion of the infrared light. This made it possible to see the movement of infrared light, which is normally invisible to the naked eye. The method of using a special fluorescent substance to convert the wavelength (color) of light was a precursor to the structure of the white LED lamp, a product that has seen rapidly growing use since about 2000.



The GLE-50G gallium arsenide double LED emitted visible green light and near-infrared light simultaneously

Increasing the Functions and Applications of LED Lamps

In 1972, the company released the GL-50AR gallium arsenide phosphide red LED lamp and the GL-50PR gallium phosphide red LED lamp. Besides giving high brightness with low electric current, these LED lamps emitted light from the entire crystal chip and could thus be used in applications such as number display elements.

The company also worked to expand applications. It developed unique applications such as large-size number displays and bar graphs. Usage of LED lamps grew to include consumer electronics applications such as the indicators for audio-visual equipment.

Thus began a virtuous circle whereby improved functions and performance created a wider range of product applications for the devices and resulted in lower prices due to economies of scale, in turn making the devices affordable for even more applications. In 1975, the company's LED lamp business in Japan enjoyed a more-than-30% share of this growing field, even reaching over 40% in certain months.

* A p-n junction is a junction formed at the boundary between a p-type and an n-type semiconductor.

4 Supporting the Home Appliance Boom

The R-10 microwave oven in use at a department store in Osaka

Mass Production of Japan's First Microwave Oven

Development of Microwave Oven, Dissemination to Households

In 1960, the company began R&D in the promising field of microwave ovens. This product used powerful, ultra-high-frequency (2.45 GHz) radio waves emitted by a magnetron—a type of vacuum tube—to cook food from the inside out.

In April 1961, a 2 kW prototype displayed at the 4th International Trade Fair in Tokyo garnered an enthusiastic response. The following April, the company released the R-10, a 1 kW model that was Japan's first mass-produced microwave oven. Priced at 540,000 yen, it was ordered by restaurants and other commercial establishments.

Because the first microwave ovens were rather expensive, the company sold them by taking them to restaurants so potential customers could see how they were used and taste the food they cooked. Product developers were involved in the process of making them easier to use and improving the technology.

At the bakery at Korakuen Stadium in Tokyo, customers enjoyed pre-baked pancakes that were warmed up in the shop's microwave oven. In 1967, Kintetsu Corporation purchased a microwave oven for the buffet car on its Osaka-Nagoya limited express train.

First Microwave Oven in Japan with Turntable

In 1966, the company released the R-600, the first microwave oven in Japan with a turntable. It was priced below 200,000 yen for the household-use market and was compatible with standard household power sources. The turntable rotated food for even cooking, and a window allowed users to monitor their food.

In September 1967, the R-1000 commercial-use microwave oven was released. This product achieved high efficiency with improved stabilizing circuits for the magnetron's power source. It also incorporated a bicycle bell that emitted a "ding!" sound to alert users that cooking was finished. Eventually all microwave ovens used the same kind of bell, and people in Japan were soon referring to microwave ovens as "the ding!"

The R-600, Japan's first turntable-type microwave oven

Growing Lineup of Appliances

Seeking to expand its lineup of appliances, the company established a laboratory for basic research in 1961. Located in the Yao Plant—now the Advanced Technology Development Center of the Health and Environment Systems Group—it successfully developed a wide range of appliances, including refrigerators, washing machines, and air conditioners. To give one example, the laboratory's array of measuring devices enabled engineers to advance from water-cooled air conditioners to compressor-type products.

From the late 1950s to the 1960s, the company came out with many appliances with proprietary functions that were clever and original.

Memorable hit products included the KF-650 fish roaster, which used an electric heater installed under the top cover to cook fish without creating smoke. Also popular was a refrigerator that used a new type of insulation to halve the thickness of the walls. This refrigerator also incorporated a fan cooling system that eliminated the need to defrost the freezer compartment.

Start of Color TV Sales

Ushering in the Color TV Age

A number of companies began releasing color TVs on July 1, 1960, in time for Japan's first color broadcasts that September. While many companies were having trouble achieving decent picture quality, Hayakawa Electric's first color TV, the 21-inch CV-2101, showed the public consistently high-quality images at an industry trade show prior to market release.

Color TVs, however, took some time to proliferate. They were initially priced at about 500,000 yen—this, at a time when the average starting salary for government workers with a high school education was 7,400 yen a month. Moreover, there was still only about an hour of color broadcasting each day.

In the US, the early 1960s saw a boom in color TVs that boosted exports from Japan. The country's production went from about 5,000 TV sets in 1962 to 1.28 million in 1967, and this economy of scale brought prices down.

The 1964 Summer Olympics in Tokyo provided the impetus for more color broadcasts; by January 1965, NHK was showing about 11 hours of color programming each day. Thanks partly to falling prices, Japan eventually enjoyed a color TV boom of its own. In 1966, TVs accounted for 43% of the company's sales. In 1968, production began at the company's Tochigi Plant, which had a dedicated color TV line. The company produced about 300,000 TV sets that year and about 400,000 the following year.

At that time, color TVs required special picture adjustment upon installation. The company thus developed a test signal consisting of two on-screen red lines, for the purpose of adjusting the hues. This feature first appeared on the 19C-D3N, released in 1969. The 19CU-810, which was released the following year, automatically adjusted 12 picture parameters—including color, image quality, brightness, and contrast—and earned accolades from consumers.

Release of the Transistor Radio

In January 1957, the company released the TR-115 transistor radio. Due to the boom in pocket transistor radios in the US, the company received a huge order of 15,000 units in October 1957. Export radios now played a vital role in the company's business.

By 1964, transistor radio production in Japan had overtaken that of vacuum-tube radios. And by 1967, the number of transistor radios produced in Japan had grown to approximately nine times the 1964 level.

The CV-2101, the company's first color TV

Wedding of the Crown Prince and Princess

On April 10, 1959, Japan's Crown Prince Akihito married Michiko Shoda. Sales of TV sets boomed prior to the wedding at the prospect of being able to see a live broadcast of the ceremony and parade.

The day of the wedding was declared a national holiday. More than 500,000 people packed the parade route, and an estimated 15 million watched the event live on television.

The imperial wedding didn't just bring TVs into the public consciousness; it opened the door to a new consumer electronics boom.

Crown Prince Akihito and Crown Princess Michiko on their wedding day (photo courtesy of *Yomiuri Shimbun* newspaper)

5 Towards an Invigorating, Fulfilling Corporation

The MI Campaign

The Company's 50th and 55th Anniversaries

With sales flat, the company embarked on initiatives to create momentum that would propel it into the next phase of growth. In 1961, the company celebrated its 50th year in business with a sale that included the chance to win a house.

Sign for the company's 50th anniversary sale. The company was offering a total of 50 million yen in prizes, which included a house and a luxury car (April 1–September 30, 1961)

The company celebrated its 50th anniversary in 1962 with a publication in September highlighting 50 years of great product ideas from Hayakawa Electric.

To celebrate the company's 55th anniversary, in 1967 the company held Sharp technology fairs at department stores in Japan's major cities. Featuring products incorporating the company's then-current technologies, as well as technologies designed for homes of the future, the fairs drew countless visitors and boosted the brand image.

Visitors hear an explanation of a scale model of the company's traffic information system at a Sharp technology fair

Boosting In-House Morale and the Sharp Image

In January 1969, the company began its MI (Morale Image) campaign. An independent public opinion survey showed that people had a lower image of the company than it had hoped for. To counter this, the company strove to create an image of itself as a sincere first-class business possessing superior technology. The company conducted a multi-faceted information campaign to boost in-house morale while also raising its public image.

One of these measures was the weekly distribution of the MI Card to all employees. The cards summarized a range of corporate information from Hayakawa Electric in Japan and around the world relating to products, technologies, management, personnel, and history.

Other measures that helped make the campaign a success included corporate public relations, new corporate colors, redesigned uniforms, and a revised corporate charter.

MI Cards (1969–1970) provided employees with information using colorful photos and simple, casual writing

Towards Modern Quality Control

Improving QC Activities

In 1949, a number of the company's employees attended training sessions given by Eizaburo Nishibori, a pioneer in the field of statistical quality control in Japan. This prompted the company to adopt scientific quality control. Quality control (or QC) was immediately incorporated into the speaker factory, a quality control manager was appointed in the company's production division in September 1951, and a quality control division was launched in 1952. In 1955, Sharp audio speakers were certified for JIS (Japanese Industrial Standards). Taking this as an opportunity, the company formulated the company-wide HS (Hayakawa Standards), the purpose of which was to standardize in-house processes. In 1959, quality control departments were established in all company factories.

In the 1960s, the accepted wisdom regarding quality control was that inspections alone didn't guarantee quality; rather, quality resulted from the production process. Based on a redefined set of standards, work at the company's facilities was conducted with thorough attention to precision. As a result of these efforts, in 1963, the Yao Plant became a JIS-certified factory. It went on to win a series of prizes, including the Osaka Trade and Industry Bureau Director's Award, the Agency of Industrial Science and Technology President's Award, and the Minister of International Trade and Industry Award.

When the company developed the world's first all-transistor diode calculator in 1964, it had to ensure the reliability of the design owing to the product's large number of parts. The quality control measures conducted to ensure such design reliability were to be employed by the company in subsequent products.

Start of Small-Group Activities

In the mid-1960s, small-group activities* began to be incorporated into quality control. In the company's wireless products division, ZD (Zero Defect) activities were begun in June 1966 in the form of the 00 (zero zero) Strategy. The goal was to boost reliability and lower costs to ensure zero work errors and zero defects in the production of color TVs for the US market.

Under the GB (Greater Balance) Strategy put in place by the appliance division in August 1966, QC circles were the basis for employees to set concrete individual targets that they would work towards achieving.

The company had gotten an early start by incorporating quality control activities from 1949 onwards. Consequently, it succeeded in using small-group activities in the workplace to make QC an integral part of the corporate culture in the 1960s.

President Hayakawa's Social Contributions

In 1952, President Hayakawa went to the US for negotiations on a TV business tie-up. There, he visited social welfare facilities, including institutions for the disabled, and saw how advanced the country was in providing for the disadvantaged. He also saw how women had become fully integrated into the American workforce. Soon after arriving back in Japan, he initiated construction of a nursery school near the head office. This opened in 1954 as the Ikutoku-en nursery school.

President Hayakawa remembered his own difficult times as a child, and he wanted to build a place where children of single-parent families or double-income families could be happy while their parents were away at work. In 1976, the facility was rebuilt as a three-storey steel-frame building that also had a mother-child exercise room and a gallery for selling artwork produced by the disabled.

President Hayakawa affectionately watches over the youngsters at Ikutoku-en (1954)

In September 1962, President Hayakawa donated his own money for the construction of the Osaka Municipal Hayakawa Welfare Hall. He wanted to do his part to brighten the lives of the disabled and the elderly by giving them a place to relax and enjoy themselves.

In November 1969, the Osaka Municipal Abeno Youth Center (now the Momogaike Park Citizens Center) was completed. President Hayakawa donated construction funds with the conviction that young people needed cultural facilities to exercise their minds and bodies.

These social contribution activities were carried out with President Hayakawa's own money and with other funds gathered in a box in his office called the "Happiness Box." The money earned from his public speeches and writings went into this box and was then used for social welfare activities and employee charities. Eventually, company executives and others sympathetic to his causes began putting money in this box.

President Hayakawa's many social contribution efforts were widely lauded. In 1960, he received the Medal with Blue Ribbon from the Japanese government for his work in social welfare and in promoting employment for the physically disabled. And in 1965, he received the Japanese Order of the Sacred Treasure, Gold Rays with Neck Ribbon for many years of success in business and social welfare.

* Activities conducted by a small number of people who focus on finding ways to improve the quality and efficiency of the work they do.

6 Leveraging the Domestic Appliance Marketing Network

Establishing Sales Companies and Dealers

To maintain its marketing network and expand as a well-balanced comprehensive consumer electronics manufacturer, the company began expanding its product lineup in June 1960 by getting a foothold in categories beyond TVs and radios.

In December 1960, it unified its sales organization by setting up the Marketing Group, which allowed it to more quickly respond to rapid changes in market demand. As well, it adopted a consistent strategy in which nine sales divisions would each be in charge of one of nine regions of Japan.

Besides appliances, the company established a sales division for specialized equipment within the Marketing Group. The goal was to develop and sell products such as microwave ovens, medical equipment, solar cells, and EL displays.

Also at this time, the company began establishing new sales branches to strengthen its marketing network with dedicated Sharp dealers (i.e., wholesalers). To further strengthen its marketing abilities, it established regional sales companies—starting in Kyoto and Kobe—that combined the functions of dealers and dedicated regional sales branches. This gave the company fixed distribution routes from head office to sales outlets and thus enabled a more clear-cut marketing network.

In 1967, the company had 54 regional sales companies, 11 installment sales companies, and three after-sales service companies. In October of that year, Sharp Electric, which had until then been an independent sales company for the manufacturer (Hayakawa Electric), was absorbed along with the regional companies into Hayakawa Electric to form a single joint entity.

In December 1967, the company became the first major Japanese electronics manufacturer to set up in Okinawa—which was then still under US administration—by establishing Sharp Electronics Sales Okinawa Corporation as a domestic regional sales company. The company thus boosted its marketing network by staying ahead of its rivals in establishing sales bases. Sharp Electronics Sales Okinawa gave the company a vastly larger market share in this southern region.

In March 1968, specialized equipment-installation companies were established in Osaka, Tokyo, and Nagoya. Since sales outlets could not carry out installation of products such as air conditioners, these new companies were dedicated to delivering and installing Sharp products for customers.

Start of the 70 Strategy and ATOM Units

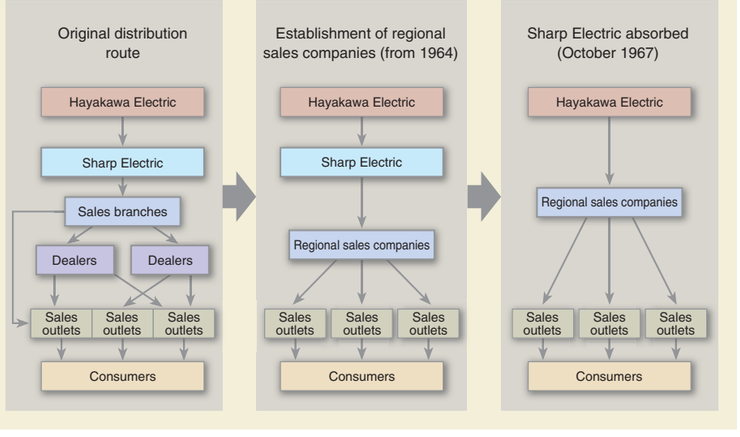
70 Strategy

While the company had established regional sales companies, its next step was to boost its network of outlets to ensure steady sales progress. In 1965, a five-year plan was formulated to have company-affiliated sales outlets account for 70% of total company sales. This plan was dubbed the "70 Strategy" since it was to be achieved by fiscal 1970.

Strategies were planned and support activities were conducted in line with the needs of individual stores. New sales routes for products such as office equipment and housing equipment were established, as were new stores.

In establishing new stores, the company allowed owners of existing sales outlets and company employees to apply to be the owners or managers of these new stores. The company would give these budding store managers its full support and those stores would open as Appliance Centers. In June 1967, the company opened the Minami Osaka Sharp Appliance Center as a partner store to Sharp Friend Shops. More Appliance Centers were opened around the country to help strengthen the company's marketing network.

Changing distribution routes



The company stressed business cooperation in order to boost the sales capabilities of its sales outlets. The goal was to achieve efficient marketing and a strong business foundation by having small-scale outlets work with each other. One effort towards this end was the 1967 launch of nationwide Accounting Centers, which supported the outlets in matters of accounting, taxes, and sales plans. Next was the 1968 nationwide establishment of Business Cooperation Centers. Areas in which these centers provided support included personnel hiring (cooperative hiring, for example), sales promotion (joint sales exhibits), and a customer membership program (the Friend system).

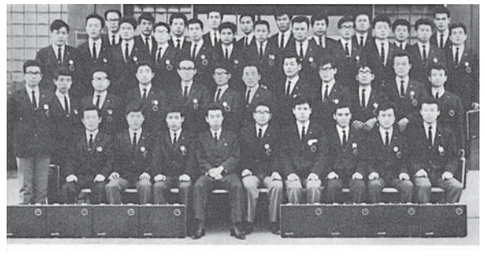
In March 1971, company-affiliated sales outlets accounted for more than 70% of overall company sales.

Originally, products made at each company plant were shipped by that plant to regional sales companies. But to consolidate and streamline transportation, the Sharp Tokyo Product Center was established in 1964 and the Sharp Osaka Product Center in 1969.

The Product Center in Fujiidera City, Osaka Prefecture

Start of ATOM Units

The Tokyo Olympics of 1964 were followed by an economic slump in 1965, when the company was saddled with approximately 10 months of inventory for TVs and had to temporarily stop production. To help alleviate this problem, a system of dedicated traveling sales promoters was established to support sales outlets. Called ATOM ("Attack Team of Market"), the teams consisted of employees from the manufacturing and engineering divisions who knew little about sales. It was thought that employees who had no firsthand experience of the time when sales were booming would have no preconceptions about selling, and that they would therefore stick to the basics of sales and marketing when working on the front lines of retail.



The very first ATOM team in front of the head office

In August 1965, 47 employees were chosen from among the applicants to form the first ATOM team. Their duties included going to sales outlets, examining TV picture quality (called "TV health check-ups"), visiting customers, tapping potential markets, and creating a new customer base.

Before long, the diligence of the ATOM team was having an effect on consumers and helping boost sales, as well as earning the trust of sales outlets. Team members were also earning accolades within the company, and by April 1966 there were a total of about 100 ATOM members.

ATOM members gradually began playing more important roles. While the period from the start of the program until 1966 was spent building up customers for sales outlets, by around 1967 ATOM had entered a period of establishing new sales outlets. When the Business Cooperation Center system was launched in 1968, ATOM teams were instrumental in training staff, as the company stressed the importance of establishing outlets and training staff.

Because the ATOM system was started with employees who had no previous sales experience, group training sessions to improve job skills were begun a year later. These group training sessions evolved to become a training program for the staff of sales outlets.

Microwave Oven Sales Promotion

Microwave ovens were a product that most consumers knew almost nothing about, so it was the sales division's job to somehow show the public the benefits of this new product. In 1967, when home-use microwave ovens were just starting to catch on, the company sent out its microwave oven cooking instructors to get the job done. These female employees had been working since 1965 to create dishes suitable for microwave cooking, and they now began expanding their activities in earnest.

A company instructor teaches participants about microwave oven cooking

Leading party-style demonstration events, the instructors allowed participants to see and experience microwave ovens, and to taste what these devices could do. This convinced the public of the products' benefits and led to increasing sales.

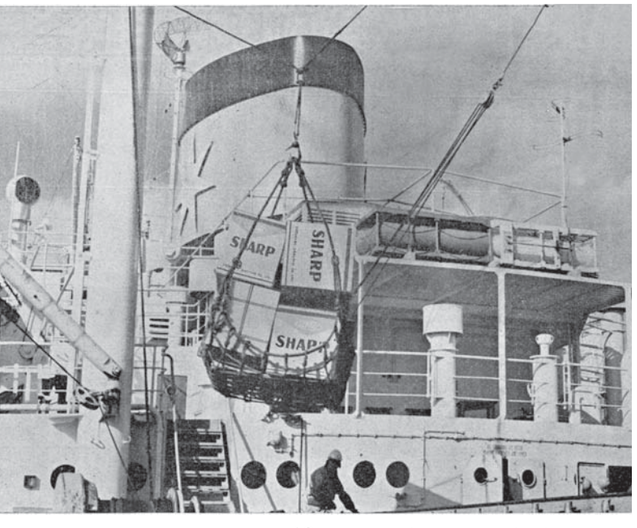
7 Sales Company Established in the US

Export Group Established, Exports Expanded

In the post-WWII period, the company renewed its export business mainly through radio parts, although the volume was still low. Exports later skyrocketed in 1957 with the sale of transistor radios. The 10 employees who made up the export division at that time had their hands full negotiating with customers, issuing letters of credit, and filling out export paperwork. Still, they were proud and excited to be supporting the company's export business. The main export products at the time were transistor radios for the US and vacuum-tube radios for Asian markets. The US accounted for the largest share of Hayakawa Electric's exports, at about 40%, followed by regions such as South America.

Starting in about 1958, there was huge jump in Japanese transistor radio exports to the US. To avoid a backlash from the US, under guidelines from Japan's Ministry of International Trade and Industry, companies initiated systems to restrict export prices, inspect exported products, and limit the number of products that could be exported. The Japanese radio industry was in a fierce battle with American manufacturers, so in order to avoid getting caught in a simple price war, Hayakawa Electric distinguished its lineup by including high-end models. This helped boost export sales.

In Asia, the company expanded its marketing network by signing dealer agreements in 1959 with companies including Roxy Electric Company Limited* in Hong Kong and Sampo Electronics Company in Taiwan.



Large numbers of Sharp products were exported to countries around the world (around 1960)

In June 1963, the company looked to further expand exports by reorganizing its export division into the Export Group, with a total of 100 employees. Exports continued to grow, reaching about 20% of overall company sales.

Around this time, Japan was beginning to have trouble exporting to developing countries in Southeast Asia and South America. These fledgling economies wanted to protect their own industries by imposing high import tariffs and restricting the import of finished products. Hayakawa Electric countered this by signing T/A (technical collaboration agreements) with dealer companies in these countries, which enabled the company to manufacture black-and-white TVs and refrigerators locally.

The first such T/A agreement was with Taiwan's Sampo in 1966. This was followed by two agreements with Roxy—one for Singapore in 1966 and one for Malaysia in 1968—to start production in these countries.

A T/A was a mutually beneficial relationship that furthered industrial development by giving Hayakawa Electric royalties and the local partner company expertise in the latest technologies and plant management.

First Overseas Sales Subsidiary Established in the US

Sales Subsidiary Promotes Sharp Brand

Originally in the US, Hayakawa Electric made products at the request of appliance manufacturers, wholesalers, and department stores, which were then sold under the brand names of these customers. This meant that the company, through its commercial customers, could learn about the tastes of US consumers and about US quality standards. There were disadvantages, however: not only was the company unable to gain brand recognition; it could not build up marketing know-how or provide sufficient after-sales service. It decided that it must overcome these problems and boost exports by establishing its own sales company in the US.

In May 1962, the company's first overseas sales subsidiary, Sharp Electronics Corporation (SEC), was established in the heart of Manhattan. A wholly owned subsidiary capitalized at US$150,000 (5.4 million yen), it had 14 employees, including five from Japan.

SEC began its business selling mainly transistor radios and portable black-and-white TVs, but sales of US$2.74 million (986 million yen) in its first fiscal term (October 1962 to July 1963) were less than half of the target. When a quality problem occurred with some of the company's TVs, it responded by introducing a stricter quality control system and beefing up after-sales service. But the company faced a tough battle, due to factors including lack of brand power and a lack of familiarity with US business practices.

In 1962, SEC had its head office at the Rockefeller Center in New York City

Three years after its establishment, SEC moved across the Hudson River to New Jersey. This gave it a large enough area to house offices, a warehouse, and a repair and inspection space, and also enabled it to integrate its marketing and service functions.

Calculators and Other New Products Propel the Company

In 1966, SEC added the CS-20A calculator to its lineup, but it needed an office products sales route through which to market the product. SEC's marketing managers leafed through American city phone books looking for major office equipment dealers to carry the CS-20A. They visited dealers and other potential customers in the daytime and held "tempura parties" for them at night. These were a hit with the Americans at a time when Japanese food was still a rarity, and Sharp calculators were able to make a strong impression. This was the dawning of the calculator age, and the company's dogged determination led to the Sharp name becoming a familiar part of the US office equipment landscape.

The calculator helped SEC dramatically boost its performance. Sales in the company's fifth fiscal period (August 1966 to July 1967) were approximately US$7.12 million (2.56 billion yen), and SEC's ranks had swelled to 24 employees from Japan and three-dozen local staff.

SEC's expanding business helped raise exports to 38% of the company's worldwide sales by fiscal 1968. And SEC's momentum provided a boost to sales in Europe.

Sales Subsidiaries Established in Europe

In 1968, Hayakawa Electric (Europe) GmbH (HEEG) was established in Hamburg, West Germany (now Germany). Capitalized at DM 400,000 (3.6 million yen), the company had seven employees, including one hired locally. Hayakawa Electric had originally opened a branch in West Germany in 1959, but sales through dealers to European markets did not reach expectations.

In November 1969, Sharp Electronics (U.K.) Ltd. (SUK) was established in Manchester, UK. With 21 employees, including four from Japan, the company had a capitalization of GBP 80,000 (69.1 million yen). SUK was established to take over the business of a bankrupt dealer who had been selling Sharp products. Because there was a period between this bankruptcy and the establishment of SUK, customers in the UK had trouble getting after-sales service for some time. SUK was able to expand its marketing network and gain a firmer footing in the country through a system of registration for retailers that regained the customer trust it had lost.

1968: The company's first sales base in Europe. The name was changed to Sharp Electronics (Europe) GmbH (SEEG) in 1970 (This photo was taken around 1971)

* Roxy Electric Company Limited was a Sharp dealer based in Hong Kong. Sharp entered joint ventures with Roxy in order to establish sales and production companies in Singapore, Malaysia, and Hong Kong.