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How Samsung out-hustled Japan Inc.

By Junko Yoshida

How Samsung electronics made the transition from a consumer electronics dwarf to a global brand is a well-told story. Over the past decade, Samsung has ascended to the status of media darling and envy of the industry as it has transformed itself into the world-leading supplier of everything from consumer electronics to PCs to wireless handsets to flat-panel displays to memory and semiconductors.

Less well-known, however, is the story of how Samsung, based in Seoul, South Korea, achieved its current supremacy by battling Japanese companies on their own turf--consumer electronics and memory chips. Samsung co-opted the Japanese playbook, which calls for a commitment to win at any cost, and eventually beat Japan at its own game.

Samsung No. 1 in SRAM ...

Top 10 SRAM vendors, \$ millions

2006 rank	2007 rank	Company	2006 Revenue	2007 Revenue
1	1	Samsung	867	616
2	2	Cypress	303	281
4	3	Toshiba	243	223
5	4	Micron	230	196
3	5	NEC	254	175
6	6	Renesas	195	154
10	7	Winbond	79	83
8	8	Fujitsu	90	69
11	9	ISSI	68	69
9	10	Sharp	79	59
		Others	476	283
		Total	2,884	2,208

SOURCE: iSuppli

... and in flash ...

Top 10 flash memory suppliers, \$ millions

2006 rank	2007 rank	Company	2006 Revenue	2007 Revenue
1	1	Samsung	6,334	6,919
2	2	Toshiba	3,514	4,087
3	3	Spansion	2,579	2,500
4	4	Hynix	2,189	2,352
5	5	Intel	2,163	2,082
6	6	ST	1,552	1,349
8	7	Micron	404	853
7	8	Renesas	732	331
9	9	SST	330	285
11	10	Macronix	249	271
		Others	702	489
		Total	20,748	21,518

SOURCE: iSuppli

... in NAND

Top 5 NAND vendors, \$ millions

	2007 rank	Company	2006 Revenue	2007 Revenue
1	1	Samsung	5,614	5,859
2	2	Toshiba	3,222	3,832
3	3	Hynix	2,189	2,352
5	4	Micron	357	853
7	5	Intel	111	407
		Others	867	609
		Total	12,360	13,912

SOURCE: iSuppli

Deeply rooted in Japan

After languishing for years on the sidelines, watching Japan's technology giants score big, Samsung indeed adopted a new strategy: "If you can't beat 'em, join 'em--*then* beat 'em."

Jong Yong Yun, former vice chairman and CEO at Samsung Electronics and now the company's permanent advisor, personifies that strategy.

Yun, protégé of Samsung Group's legendary former chairman Kun Hee Lee, spent five years in Japan. He was first sent to Japan in 1978 to head the company's branch office there. In 1992, Yun returned to Japan as president and CEO of Samsung Tokyo headquarters.

Yun, who deftly switched among Japanese, English and Korean during a recent interview with *EE Times*, spoke nostalgically of his days in Tokyo.

Back then, Japanese executives and consumers never called Samsung by its preferred pronunciation, "Samsung." Instead, they called it "Sansei," translating the Korean word Samsung—"Three Stars"—into Japanese.

The 1970s and 1980s were heady days for the Japanese consumer electronics industry. JVC (where I once worked) and Sony were engaged in a fierce VCR format war; Sony created a brand new product category called Walkman; Pioneer, RCA and JVC fought tooth and nail in a pre-DVD, analog video-disk format battle; Sony and Philips formed an alliance to push CD.

By contrast, Samsung's consumer product lines consisted of TVs, radios, radio cassette recorders and appliances. For Samsung, VCRs represented a particularly high barrier to entry, Yun said. By the early 1980s, leading Japanese consumer electronics companies were working together to establish various cross-licensing agreements. Samsung then, with less intellectual property to trade, was never one of them. To build a VCR, "We had to pay royalties not only to JVC but also to Sony, in addition to RCA, since each VCR integrated [an RCA-patented] TV tuner," recalled Yun.

The soft-spoken Yun described the Samsung of those days as a "*kohatsu*"--a "latecomer," in Japanese--to the electronics industry. Although Yun was too polite to say so, Japanese vendors then used the term, which carries a slightly negative connotation, to shut Koreans out of their clique. During that era, "Japanese manufacturers never let [Samsung] be part of their group or alliance," Yun acknowledged.

Fast forward to 2008.

Puzzling to some in the industry is that even today, with Samsung an undisputed leader in the digital consumer electronics market, powerful enough to influence the entire industry, the Korean giant never seems eager to take sides in format or standards battles. Whether Blu-ray vs. HD DVD or diverging home networking standards, Samsung is rarely in the thick of the argument, advocating one approach over the others.

Why? Said Yun, "We try every format. We just don't know which will win."

With a touch of irony, Yun added, "While Japanese manufacturers may be experienced enough [in format wars] to make the right decision, Samsung was never afforded the opportunity to gain that insight. As a '*kohatsu*,' we've had no choice but to bet on every horse."

While Yun still defines his company with the humble term "*kohatsu*," that's far from reality.

Chris Fisher, CEO of The Ether Group, a Silicon Valley-based consulting firm, observed, "Samsung subscribes to a philosophy that consumers are fickle and markets are fickle. No other companies understand it better than Samsung. They bet across all of the technologies to win."

In fact, Samsung has pursued every flat-panel display technology, from DLP (digital light processing) and LCoS (liquid crystal-on-silicon) to PDP and LCD.

Samsung also freed itself from Japanese manufacturers' obsession with forming alliances. Rick Sizemore, chief strategy officer at Multimedia Intelligence (Scottsdale, Ariz), described the MP3 wars as "most interesting."

"Sony had the Walkman but it got eclipsed by Samsung," he said--not just in regular MP3 players, "but in the form of the Nano. Apple picked Samsung to supply the chip set [flash] that made the Nano so thin."

Sizemore observed, "Samsung has done a vicious job of winning sockets from memories to displays."

Similarly, the Korean giant made an early mark on the cell phone market, identifying it as "a digital convergence platform" where its own memory, display and LSI technologies could be heavily exploited.

When comparing Samsung in the 1970s with Samsung today, what has really changed?

"Engineering resources," Yun said. Samsung recruited high-quality engineers--not just in South Korea, but also in the United States.

South Korea's entry into the electronics industry in the 1970s followed four principles Japanese rivals had practiced in the 1960s: Emphasize mass production, learn from foreign technology, use a follow-the-leader strategy and take advantage of government support.

Samsung pushed those principles to the extreme.

Today, according to Yun, Samsung each year hires as many as 5,000 employees--90 percent are engineers, many with bachelor's degrees or higher.

Astonishing to every company that deals with Samsung are its almost bottomless engineering resources.

"Samsung has as many as 20 different engineering teams--all working in parallel--set out to solve the same problem," said The Ether Group's Fisher, recalling the days when he was pitching his former company's ultra-wideband technology to Samsung.

A senior executive at a mobile TV technology company, who spoke on condition of anonymity, agreed. "If you work with Nokia, you know exactly where your project stands. Unless someone makes a very good case that a particular handset design wouldn't work, the handset model you're in won't get cancelled." In contrast, of 70 to 90 handset projects under way in parallel at Samsung at any given time, only 25 percent will reach the commercial market. "That's a luxury Nokia wouldn't have," the executive said.

Several industry sources attributed Samsung's success to the cost of engineering.

In South Korea, top graduates of the nation's best engineering schools can take an exam and apply for a job at major technology companies, including Samsung. Once accepted, they work for three years in exchange for waiving mandatory two-year military service. If they work at Samsung, their salaries are subsidized by the Korean government.

Yun confirmed the practice but downplayed its significance. The number of students who qualify for this program is limited to 100 annually, he said. Considering the huge number of engineers the company hires every year, that's a drop in the bucket.

Still, Samsung's multiple-sourcing strategies--especially for its mobile handset business--seems excessive to industry observers.

"I've seen Samsung purchase GSM/GPRS baseband chips from several different vendors, like Agere, SkyWorks and Broadcom," said Will Strauss, CEO of Forward Concepts. "I couldn't understand how Samsung could afford to have three or more parallel design efforts to reach the same end product [a GSM/GPRS handset]."

Similarly in 3G, Samsung is using "Broadcom, Qualcomm and Infineon baseband chips in various 3G handsets," Strauss said. "Again, three parallel design efforts to reach the same end product."

Richard Doherty, principal of technology consulting firm Envisioneering (Seaford, N.Y.), offered another view. "Managers [at Samsung] are paranoid about losing a product to a chip source delay or blockage," he said. That may explain why Samsung insists on staying with the vertically integrated manufacturing model.

By 1982, when Samsung began to fully engage in the international memory market, who would have imagined the company would not only catch up but keep up with the Japanese in the race to invest in memory devices?

The thought would never have crossed the minds of those in the Japanese semiconductor industry. In fact, by the late 1980s, Hitachi, NEC, Toshiba and other Japanese companies already dominated the world market in DRAMs.

Samsung stayed in the game because it deemed its memory business critical. In Samsung's view, internalization of "core components" would reduce its heavy dependence on Japanese suppliers, enabling it to add new capabilities in consumer products.

Samsung combined new knowledge it gained from foreign sources like Micron Technology with its own accumulated skills. The company kept investing in subsequent generations of DRAMs, and in 1995 became one of the first companies to ship engineering samples of a 64-megabit DRAM.

In fact, Samsung had its best year in the memory business in 1995, Yun said.

In contrast, after the Japanese economic bubble burst, Japanese memory manufacturers were running out of resources. The trouble was, said Yun, "Our memory business also went down in 1996."

All bets seemed to be off when the Asian financial crisis hit South Korea hard in 1997, pushing Samsung deep in debt, to near bankruptcy.

That year, Yun was tapped by Samsung Group's then chairman Lee to take over Samsung Electronics.

Yun reduced Samsung Electronics' workforce by 30 percent and made dramatic cuts in assets and unprofitable businesses in just 1.5 years. Yun said, "This wasn't ordinary '*kaizen*' (in Japanese, 'gradual improvements'), often practiced by Japanese companies, but it was a real '*kaikaku*' (revolution)."

While restructuring, Yun gambled on memory.

He observed the global industry and saw the Japanese no longer investing. "Micron in the United States and Siemens in Europe weren't doing well, either," said Yun. Clearly, everyone was getting weary of the cyclical nature of the memory business. That's when Yun knew, he said, "We had to make a move."

And the investment paid off.

The memory business is "a scale game," said Nam Hyung Kim, director and chief analyst at market research firm iSuppli. Cost is everything; suppliers are adopting the "mega-fab" concept to reduce their cost structures, the analyst said. "Most of the new memory fabs will have at least a 150-K to 200-K wafer output per month to take full advantage of the scale."

Then, how can Samsung continue to stay in the game--and win?

The answer lies in Samsung's knowing its roots--manufacturing--and trusting its instinct to stay vertically integrated. Yun recalled, "Most foreign investors, 10 years ago, urged us to break up the company and focus on each product line."

That's exactly what Motorola, Philips and Siemens did. And look where they are today.

Samsung makes virtually every key electronic product.

"Samsung's strategy has been to leverage all its vast array of product lines," said iSuppli's Kim. "The company not only has many product lines, but also more than 10 [leading] products in terms of market share. I believe this structure works only when the company maintains a very tight management structure and strong leadership."