

THE EROSION OF INCUMBENCY ADVANTAGE IN MOTOROLA'S WIRELESS HANDSET BUSINESS¹

In 1993 the first digital wireless voice networks were deployed in Europe. At that time, Motorola dominated the global wireless handset market with 59 percent market share, nearly four times that of its nearest competitor. By 2000, Motorola's market leadership had eroded to a 15 percent share, a distant second behind Nokia Corporation whose share had climbed to 31 percent. (Exhibit 2) Why did Motorola, a company with such a dominant initial market position, find itself scrambling to survive in an industry it had virtually created only a few years earlier?

Motorola's incumbency advantage: 1983-93

In 1983 Motorola developed and commercialized the first analog wireless handset as well as the requisite support infrastructure (see Exhibit 1 for a timeline of technology introductions). Over the course of the next 10 years, Motorola firmly entrenched itself as the industry's technology as well as cost leader.

The breadth of Motorola's proprietary intellectual properties and its portfolio of technologies made it difficult for prospective rivals to enter the market. As volumes climbed, the company rapidly gained both experience and production cost advantages, while also enjoying unsurpassed brand loyalty. This strong technology and cost position afforded Motorola a first-mover advantage.

Motorola also strategically positioned a multi-tier product portfolio to both increase market penetration and to effectively dissuade new competitors from entering. Motorola essentially divided the market into three tiers: a low, middle and high segment characterized by product feature sets and relative pricing. Motorola offered products in all three segments, but drove value in the mid- and high-tier segments where margins were more lucrative. Motorola's offering of several products in each price/feature segment and differentiating its products to suit each carrier reduced incentives for new competitors to enter the market.

¹ © Professor Nabil Al-Najjar and Professor David Besanko, Kellogg School of Management. This reading is based on the work of EMP 50 students: Steve Zaruba, Pat Marschall, Louise Knox, Jonathan Downer, Chris Clawson, Diana Chang. We are especially indebted to Jonathan Downer and the Motorola legal department for their help. This case was prepared for use in class discussion in Competitive Strategy and Industrial Structure classes at Kellogg. Do not copy this document for any other use without our explicit permission

Motorola also attempted to safeguard its position by requiring service providers to enter into long-term exclusive supply contracts. Given the consistent excess demand for Motorola products, network operators signed these agreements in an effort to secure inventory. Given the relative stability of technology at that time, the only available market to prospective competitors were the markets Motorola chose not to serve or could not serve due to capacity constraints.

Industry changes: Early and mid 1990's

The capacity crunch. By 1993, analog carrier networks were approaching subscriber capacity. Motorola's initial response to carrier capacity constraints, was an enhancement to existing analog networks (Narrowband AMPS or NAMPS). Although marginal capacity improvements could be realized, NAMPS represented a feeble attempt to patch a much larger capacity problem. Two years after the first digital networks were deployed, Motorola launched the StarTAC analog phone. The initial success of the StarTAC reinforced Motorola's decision to continue to invest in analog product development. Meanwhile, analog capacity constraints grew to critical levels

The "free-phone movement." In 1995 the cost of a cell phone to a carrier averaged about \$375 (Exhibit 2). Around this time network operators bundled a "free" phone with a service contract, making them affordable to the everyday consumer. As a result of this development, product technology leadership was being supplanted by "free phones" which served to greatly devalue Motorola's product leadership. The low-tier (low-margin) market began to fuel the carriers' quest for low cost of subscriber acquisition.

The free phone movement contributed to a general decline in margins as manufacturers competed to win carrier "free phone" volume contracts. Motorola initially resisted the pressure to reduce product prices to win these contracts, but this only opened the door to new players to enter the market's low-end segment.

Digital technology: 1993 to 2000

In the early 1990's, digital spectrum licenses were being awarded around the world in response to capacity constrained analog networks. Digital technology promised 4-8 times capacity improvement, plus additional network feature enhancements. In 1993 the first digital handsets were shipped to the European market. Motorola allocated few resources to digital product development given the continued growth and profitability in the analog segment. Motorola's reasoning was that digital product development and distribution would strain analog engineering resources while replacing analog profitability with lower digital margins (Network operators would not tolerate price increases for digital products).

Following the first year of digital introduction, driven by GSM (Global System for Mobile) in Europe, analog product sales represented 93.5 percent of total industry handset shipments. By 1997, global digital unit volume grew to nearly 60 percent, as Motorola's digital shipments, predominantly GSM handsets for the European market, represented a meager 25 percent of its overall unit sales. Putting the wireless handset market in perspective, from 1995 to 2000, industry volume saw a staggering 783 percent increase, as unit sales exploded from 46.8 million to 413 million pieces (see Exhibit 2).

While Motorola and Nokia both experienced precipitous price erosion (Motorola average selling prices declined 30 percent, while Nokia's dropped by 37 percent), Nokia's margins actually improved by 4.3 percentage points, while Motorola experienced a margin decline of 4.5 percentage points. During that same timeframe, Motorola's handset shipments grew an average of 23 percent per year, while net sales grew approximately 12 percent. While this represented acceptable growth by many industry standards, these numbers did not keep pace with Nokia whose handset sales and net revenues grew by 67 percent and 44 percent per year respectively.

The shift in market share between the major players was accompanied by increased market fragmentation: by 2000, the cumulative market share of the three largest handset manufacturers (Nokia, Motorola and Ericsson) had declined from 73 percent in 1995 to 56 percent in 2000 (Exhibit 3), indicating new entrants were gaining stronger footholds, and signaling a major shift in the foundation of the industry.

Explosive market growth contributed to Motorola's inability to accurately forecast worldwide handset demand, resulting in chronic order backlog. Network operators were desperate to source product during the Q4 peak demand periods in an effort to drive their subscriber acquisition numbers. As a result, new competitors entered the market by filling the excess market demand that Motorola could not fill (in 1995, Motorola left a significant percentage of its Q4 orders unfilled). During this time, the low-tier product segment dominated handset sales. This was driven by the carriers' goals to expand their subscriber base by offering free handsets with a new service contract, while at the same time lower the cost of subscriber acquisition. Given Motorola's capacity constraints, a profit incentive existed to prioritize fulfillment of the mid- and high-tier backlog, thereby leaving the low-tier segment available for new entrants. These new entrants were able to command a price premium driven by shortage of supply partially created by Motorola. Given the entrants' comparatively higher cost structures, these higher prices may have justified market entry. Motorola initially did not attack the new low-tier entrants, as lowering prices as a defensive strategy would adversely impact margins in all product segments. In periods of excess demand, a price cut may have appeared counterintuitive. Consequently, Nokia, Audiovox, Panasonic, Novatel and others entered the analog market, primarily at the low tier.

Exhibit 1

Simplified Technology Roadmap

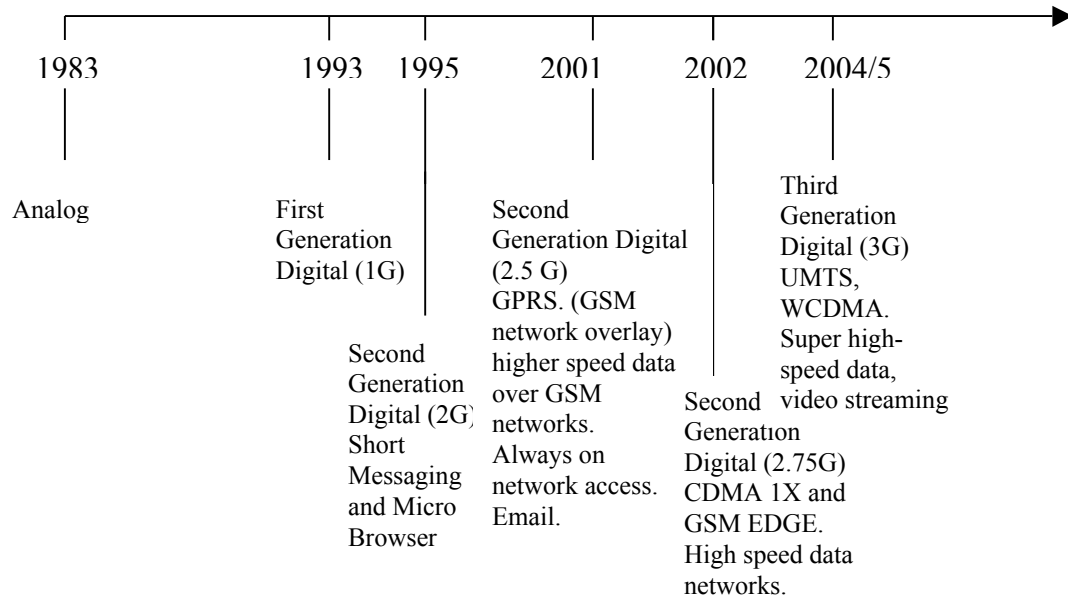


Exhibit 2: Cellular Subscriber Equipment Industry Total Available Market History - Units

	1985	%	1986	%	1987	%	1988	%	1989	%	1990	%	1991	%	1992	%
World Market																
Analog	384	100	537	100	869	100	1,562	100	2,934	100	5,060	100	7,000	100	9,865	100
GSM																
TDMA																
CDMA																
PDC																
3G																
Total	384		537		869		1,562		2,934		5,060		7,000		9,865	
Millions of u	1993	%	1994	%	1995	%	1996	%	1997	%	1998	%	1999	%	2000	%
World Market																
Analog	18,650	93.5%	27,942	87.9%	31,854	68.2%	31,422	46.5%	40,622	40.5%	34,763	21.7%	28,600	10.4%	6,195	1.5%
GSM	1,295	6.5%	3,863	12.1%	10,709	22.9%	22,500	33.3%	50,952	50.8%	93,557	58.4%	171,600	62.4%	284,970	69.0%
TDMA					875	1.9%	1,597	2.4%	6,419	6.4%	18,583	11.6%	38,500	14.0%	45,430	11.0%
CDMA					0	0.0%	778	1.2%	2,407	2.4%	13,136	8.2%	36,300	13.2%	76,405	18.5%
PDC					3,250	7.0%	11,220	16.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
3G					0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	19,945	100.0%	31,805	100.0%	46,688	100.0%	67,517	100.0%	100,300	100.0%	160,200	100.0%	275,000	100.0%	413,000	100.0%

Source: Internal estimates by a major industry participant

Exhibit 3: 1995-2000 Big 3 Cellular Market Data

	<u>Year 95</u>	<u>Year 96</u>	<u>Year 97</u>	<u>Year 98</u>	<u>Year 99</u>	<u>Year 00</u>
Market Size Mill	46.8	67.5	100.3	160.2	275.0	413.0
Shipped Units:						
Motorola	20.1	23.4	30.2	33.9	48.2	62.0
Nokia	10.0	14.0	21.4	40.8	78.5	128.0
Ericsson	4.1	7.9	16.5	24.4	31.4	43.0
Market Share:						
Motorola	43%	35%	30%	21%	18%	15%
Nokia	21%	21%	21%	25%	29%	31%
Ericsson	9%	12%	16%	15%	11%	10%
"Big 3"	73%	67%	68%	62%	57%	56%
Net Sales \$ Millions:						
Motorola	6033	5890	7461	7187	9442	10706
Nokia	3226	3979	5289	9152	13663	19917
Ericsson	1925	2865	5481	5667	5540	6158
Mfg Margin %						
Motorola	0.0%	0.0%	22.5%	16.6%	22.8%	18.0%
Nokia	0.0%	0.0%	32.2%	35.0%	37.9%	36.5%
Ericsson	0.0%	0.0%	31.0%	24.7%	20.4%	-3.2%
Average Selling Price						
Motorola	300.1	251.7	247.4	212.2	195.9	172.7
Nokia	322.6	284.2	247.3	224.3	174.1	155.6
Ericsson	469.5	362.7	332.2	232.3	176.4	143.2

Source: Internal estimates by a major industry participant