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PIAGGIO (A)

Not many products reach the goal of a fifty-year life-span.… Vespa developed from a utility vehicle, whose characteristics had been dictated exclusively by criteria such as function and cost, into an international success, a protagonist of the history of customs and the cinema, a "cult object" which has given rise to the creation of associations and collectors' guilds on a world wide scale.

—Giovanni Alberto Agnelli[1]

Introduction

During Giovanni Alberto Agnelli's first three years as chairman of Piaggio, an Italian motorbike manufacturer, he had received much praise for steering the company into renewed health and profitability. His significant achievements included investing heavily in product development to increase Piaggio's model range and establishing a presence in fast-growing international markets. Most importantly, Agnelli had also taken the company from a loss of approximately (U.S. dollar) USD60 million in 1993 to earnings of USD11 million in 1995.

But even as the company was celebrating this success—and the 50th anniversary of its popular Vespa scooter—significant competitive concerns threatened Piaggio's future. Although Piaggio was still the leading manufacturer of European scooters, Japanese manufacturers continued to threaten its dominance in this market. Also, Italian competitor Aprilia had quickly increased in popularity, focusing most of its resources on innovative design and marketing and outsourcing parts production. This practice complemented fast-changing customer preferences, which mandated increasingly broad product ranges and faster product introductions.

In this highly competitive environment, Piaggio faced the decision of whether to invest in a new engine plant. The plant would produce "green" engines designed to meet increasingly stringent regulatory requirements. Although the plans for the new engine plant were in place,

[1] From the 50th anniversary Vespa book: Giorgio Sarti, *Vespa: From Italy with Love* (Milan: Giorgio Nada Editore, 2002).

This case was prepared by Pablo Ciano and Jean Gibbons under the supervision of Jeanne M. Liedtka, Associate Professor of Business Administration.

Piaggio managers continued to wonder if sales of the engine would bring a sufficient return for their time and investment.

Industry and Market Overview

The market environment

Powered two-wheelers (PTWs) gained popularity in Europe after World War II by providing an inexpensive alternative to automobiles. (See **Exhibit 1** for an explanation of different types of PTWs.) After a major decline that began in the late 1960s, usage in Europe started to increase in the mid-1990s. The year 1996 was expected to be a year of strong growth for the European market.

Most industry experts agreed that there were two main forces driving the resurgence of the scooter market. First, increased gridlock in many major cities made these inexpensive and maneuverable vehicles the first choice for many commuters. Second, classic scooter models held great fashion appeal. During the first eight months of 1996, registrations for motorcycles, mopeds, and scooters were up 19% over 1994, with weekend riders fueling the growth. Euromonitor, a global market research company, reported that sports motorbikes bought by enthusiasts and leisure riders made up the largest percentage of sales in the motorbike market sector. In 1994, these sales accounted for 39.1% of the total market.[2] The scooter and moped sector was expected to increase from 12.5% to 13.6% of the market by the end of the decade.

One British article described the increasing market appeal of scooters: "As Britain becomes more cosmopolitan … scooters are as chic here as they always have been in Milan and Barcelona." The author continued, describing the effect this demand had on the types of models being offered:

> With so many people opting to put the nightmare of traffic jams behind them, the Italians are investing heavily in ever-more dazzling scooter designs. Some of the projects on the drawing boards of companies such as Piaggio, Aprilia and Italjet would not look out of place in a Judge Dredd comic, and are sure to entice more fashion-conscious urban kids to the joys of scootering. Fear not, for the Japanese are working hard to upstage the Italian factories' latest creations, and Honda's newest scooter is designed to shrug off the worst of British weather. It is called the Cabin and has a roof, a windscreen, and a wiper.[3]

Sales targets for PTWs varied according to engine capacity. Mopeds and small motorcycles (including scooters up to 125cc) were targeted toward teenagers and urban

[2] "Growth Cycle," *Marketing Week* (September 27, 1996).
[3] "Growth Cycle."

commuters. Their sales were a function of demographics and economic conditions, as well as weather patterns and traffic regulations.

Large motorcycles were mainly used for sport and touring. Their diffusion was essentially linked to economic conditions; the largest numbers were sold in countries with high purchasing power (Germany and Switzerland). Collectively, however, PTW sales were linked to overall economic conditions, because they were not purchased as a substitute for cars. In Italy, more than 50% of car owners also owned a moped or a motorcycle.

Demand

In 1996, world demand for mopeds and motorcycles was estimated to be 14 million vehicles per year. The European market accounted for 12% of world demand, or about 1.7 million vehicles. The number of scooters sold in Europe had increased dramatically since 1991. Sales volume in units doubled over the five-year period to 866,000 and quadrupled in Italy alone, to reach 470,000.[4]

Demand in Asia (Japan excluded) accounted for 70% of the vehicles sold. China alone accounted for 30% of worldwide sales, and represented significant potential for growth. Only three out of 1,000 Chinese owned a motorcycle compared with 420 owners per 1,000 inhabitants in Taiwan. (See **Exhibit 2** for European country comparisons.) This low density, combined with China's large population, made it the world's largest motorcycle market.

In 1996, European producers were virtually absent from the Asian market, while Japanese firms had already gained a strong foothold. By the year 2000, the world market was expected to grow to more than 18 million vehicles. This growth was expected to take place entirely in China and Southeast Asia, while European demand was expected to remain steady.

Production

By global standards, even the largest EU firms were considered only moderately sized, compared with Japanese firms. One of the largest problems for the European manufacturers was structural overcapacity; they did not enjoy the cost advantages and the large-scale production structure that their Japanese counterparts did. Considering that the minimum scale dimension for an automated engine plant was 400,000 pieces a year, the 1.7 million unit European market was too small to sustain so many competitors and so many models.

The European PTW manufacturers also suffered because of the lack of availability of competitive component suppliers. For a number of key components, EU manufacturers were entirely dependent upon non-EU technology. Moreover, most component suppliers within the EU were relatively small firms that did not have the production efficiencies of larger firms. The

[4] Charles P. Wallace, "The Next Mr. Fiat?" *Fortune* (October 14, 1996): 182–6.

resulting higher costs were transferred to end manufacturers, damaging their global competitiveness.

Italy was the second-largest producer of motorcycles behind Japan, and it dominated the European moped and motorcycle market with about 46% of value added, followed by Germany (19%) and France (16%). In terms of units manufactured, Italy maintained its leadership with 52% of the EU's production, followed by France (24%) and Spain (18%). Three companies accounted for approximately 60% of EU moped and motorcycle productions: Piaggio, Peugeot MTC (France), and MBK (France). Experts estimated that Japan controlled about 15% of total European production through license agreements and financial holdings in local plants. Assembly operations of Honda, Yamaha, and Suzuki accounted for one-third of Spanish production alone.

Changing market requirements

By the year 2000, the European Union was expected to implement a program for harmonization of manufacturing and specifications for PTWs in Europe. Improved standards were needed, in particular because of the increasing traffic and pollution problems throughout Europe. One British article described:

> The unstoppable growth of traffic in Europe, up nearly a third from 1985 to 1992, is saturating highways, leaving commuters fuming and forcing industry to scramble to maintain "just-in-time" goods deliveries. However, the possibility of building new roads to carry the load is rapidly diminishing because of tight government budgets and mounting public opposition to vehicle noise and pollution.[5]

The article further noted that the problem was complicated by people's desire to continue using their own transportation: "More than four-fifths of all passengers travel by car. A study sponsored by the Department of Transport in Britain found that slashing public transport fares by 50% would cut car traffic and emissions by no more than 2%."

Proposed solutions varied but included the possibility of charging vehicle taxes based on emissions and weight.

The first phase of implementation for the new requirements would include changes in the areas of pollution and emission standards. Many manufacturers were creating environmentally sound parts in anticipation of the new standards. Although the technology to produce a low-pollutant engine was already available, manufacturing costs for the "green" engine were very high and had, thus far, translated into a higher market price. Industry experts agreed that the availability of an affordable green engine would shape competition in the next 10 years. Several manufacturers were making plans for the production of these engines.

[5] Tom Buerkle, "Bumpy Road for Europe Traffic," *International Herald Tribune*, July 23, 1996, 1.

Piaggio

Piaggio was best known in Italy and throughout the world for the creation of the Vespa scooter. The idea for the Vespa came from Enrico Piaggio, the son of a leading military aircraft maker. World War II had left the Piaggio family close to ruin; its airplane factory in Pontedera (near Florence) had been bombed, and the demand for fighter planes had virtually disappeared. Piaggio decided to use the skills of his technicians to develop a scooter and provide a cheap means of transportation. He enlisted top design engineer Corradino D'Ascanio to bring the new project to life. The revolutionary model that resulted was the Vespa. Italian for wasp, the name fit the buzzing of its engine and the rear-end swellings of its pressed-steel frame. Just 10 years after its introduction in 1946, the Pontedera factory had turned out one million scooters. In 1956, the Vespa was the best-selling scooter in 114 countries and was built under license in Belgium, Brazil, Britain, France, Germany, India, and Spain.

In the 50 years since the first Vespa was unveiled, 15 million had been sold; 200,000 Vespas were sold in 1996 worldwide. The scooter first found popularity among families searching for inexpensive transportation and later became popular with adolescents, who were looking for a symbol of their freshly discovered freedom. Finally, the Vespa was used by urban commuters looking for ways to beat traffic jams.

A lack of focus within Piaggio had placed it close to bankruptcy during the 1980s, when it had expanded into everything from robots to car mats. Competition from Japanese manufacturers intensified, and by 1993, Piaggio's financial position was perilous, with an annual loss of (Italian lira) ITL91 million (about USD60 million); however, under new leadership, the company began to turn around that year. By 1996, Piaggio was again the leading scooter manufacturer in Europe, capturing 45% of the estimated USD2.8 billion European scooter market and 32% of the European two-wheeled vehicle market. But it was fourth worldwide behind Japanese manufacturers Honda, Suzuki, and Yamaha.

Leading the redesign efforts was Giovanni Agnelli, Piaggio's 32-year-old chairman. Agnelli was interested both in meeting market trends and spearheading responsible development of the market, even when the two conflicted. As an example, Agnelli spoke out against kits sold to scooter owners, which allowed users to increase travel speed to 100 km/h rather than the 45 km/h for which the scooters were designed. Agnelli commented, "Scooters are beginning to have a not-so-positive image because of the noise and speed problem more as urban utility vehicles than as motorcycles. Now that we are bigger, we need to be a little more politically correct."[6] As president of the Association des Constructeurs Européens de Motorcycles (ACEM), Agnelli represented all major motorcycle manufacturers in the European Union as well as their component suppliers, and sales and service retailers.

[6] Charles P. Wallace, "Scooters on a roll again; Vespa leads the way as the cheap and cheerful machines return in style—and to record sales," *Time International* (September 23, 1996): 38.

In 1996, five out of six Piaggio scooters were sold in Western Europe. But Piaggio had plans to further expand into rapidly growing international markets. In 1993, Piaggio had created a joint venture with the Fosti Motorcycle Company in China's Guangdong Province. Piaggio sold more than 130,000 mopeds in the Shanghai market in 1994, and in 1996, expanded into the provinces of Jiangsu, Shandong, and Zhejiang.[7] But this expansion proceeded much more slowly than anticipated when the central government initiated a credit squeeze, and the government banned the sale of mopeds and motor scooters in some parts of China. Sales in China in 1995 totaled USD36 million. Piaggio had fared better in its venture with an Indian company, which brought USD200 million in sales in 1995 and anticipated production of 250,000 scooters in that facility in 1996.[8]

In the European market, Piaggio had responded to the market upswing with a range of new products. Since 1995, Piaggio had launched 35 new models, from the basic 50cc scooter to the trendy Typhoon Benetton. In further efforts to connect to the trend of scooters as fashion items, Piaggio launched a sponsorship deal with Miss Selfridge and C&A (fashion stores) in 1994.

In 1996, after a USD21 million investment and three years of development, Piaggio launched new 50cc and 125cc Vespa models. Piaggio Chairman Agnelli commented, "The challenge we face is to reinterpret not just the legend but also the function of the Vespa in today's post-industrial society."[9] The 50cc model ran on the world's first fuel-injection, two-stroke engine and was the first and only scooter to meet 2000 EU requirements for exhaust and noise emissions. And while the original Vespa barely reached downhill speeds of 40 mph, the 125cc model could easily reach speeds of 60 mph. Piaggio hoped to sell 50,000 to 60,000 of these models in Europe in 1997.

Piaggio also planned to launch a new version of the 50cc Vespa with a revolutionary green engine in 1997. The engine was powered by an innovative direct-injection system, internally developed by Piaggio engineers. Piaggio estimated that the engine would reduce fuel consumption by 30% and pollution by 70%, but would translate into a 15% price increase of ITL500,000 or USD350.

Production

Piaggio's manufacturing process was almost completely vertically integrated. Its practice had always been to develop the entire scooter design internally. A team of 700 engineers (out of a total of 5,000 employees) would typically be involved in the design of any single piece of the scooter.

[7] "China: Motorcycle maker plans accelerated expansion," *China Daily*, December 14, 1998.
[8] Wallace "The Next Mr. Fiat?"
[9] Jude Webber, "Italy's Vespa scooter turns 50 with pizzazz," *Chicago Sun Times*, September 29, 1996.

When Piaggio began manufacturing scooters, it possessed all of the technical capabilities in-house, and the component-suppliers market did not exist. As demand grew, however, Piaggio fostered the development of an Italian component-suppliers sector. This group of small companies was largely clustered around Pontedera.

Because Piaggio was the only large manufacturer purchasing from these small suppliers, the bargaining relationship had always been clearly unbalanced in favor of Piaggio. Piaggio evenly granted its orders among the suppliers to protect against the risk of component unavailability. Piaggio also limited its risk by forcing slack capacity onto the component suppliers when sales were low.

While Piaggio purchased its low value-added components, such as shock absorbers, brakes, headlights, speedometers, and seats, it maintained production of all of the key strategic components. Piaggio was one of the few European manufacturers with the skills and scale to produce its own engines, which typically accounted for approximately 30% of the overall manufacturing costs. Although the engine was not a differentiating factor for customers, and the European engine models were of similar quality, Piaggio believed that the risk of purchasing a poorly performing engine could seriously damage its reputation.

Piaggio's strategy for new products had been to produce only a few carefully designed models that would last several years. Because of its heavy investment in design, Piaggio's success was linked to sales volume. The current plan to build its own green engine would place an even larger burden on Piaggio to maintain or increase sales and to sell the new engine to its competitors.

Aprilia

Piaggio's most recent competitive threat had not come from Honda or Peugeot, as might have been expected, but from a small motorcycle maker based in Noale, Italy, 18 km from Venice. In 1996, Aprilia was the second-largest motorcycle, moped, and scooter manufacturer in Europe and distinguished itself as the only European firm to cover the entire range of two-wheelers, from 50cc scooters to 1000cc open-class motorcycles. Further, Aprilia was the fastest-growing motorbike company in Europe, taking on bigger rivals such as Italy's Piaggio, France's Peugeot, and Japan's Honda. In 1996, the company was expecting sales of USD500 million, a 400% increase over sales in 1992,[10] and sales volume had increased from 55,000 to 165,000 from 1992 to 1995 (see **Exhibit 3**).

Company president Ivanno Beggio created Aprilia in the late 1970s by retooling his father's small bicycle shop. With the support of a group of friends who were also passionate about motorcycle racing, he decided to design a racing bike. Success came first with several world championships in the 125cc category followed by an explosion in commercial demand.

[10] John Rossant, "Aprilia's leader of the Pack," *BusinessWeek* (June 10, 1996).

A company spokesman noted that Aprilia was built on a sense of wonder as much as on its ability to produce motorcycles. "[The] sense of wonder is Aprilia's ability to surprise in everything we do; whether it is with new models, innovative design, performance, or racing success."[11] Beggio (who personally owned 57 motorcycles, including several classic Harley-Davidsons and valuable models from the 1930s) added:

> We have built our success by grafting imagination, creativity, and innovation onto a solid base of high-quality production. We have not resorted to any particular industrial strategies. Instead, the real secret of our success is everyone's enthusiasm, from that of the president, engineers, mechanics, and designers to our most recent factory floor workers.

Aprilia engineers relied heavily on external suppliers, co-engineering the model, and outsourcing all of the components. Resources that other competitors used for the manufacture of parts went instead to design, marketing, and assembly. "It means we can be increasingly flexible and reduce costs,"[12] said Beggio. The result was one of the best examples in Europe of lean, network manufacturing, or the "empty factory" as it was called by Italian organization experts. Aprilia worked closely with some 150 outside suppliers who furnished everything from engines and headlights to spokes and frames. Aprilia purchased an engine manufactured by Minarelli under license from Yamaha. These engines had proved reliable and relatively cheap and were produced on a very large scale.

In the past 10 years, Aprilia had brought more than 40 different models to market—sometimes in as few as 12 months from initial concept. No other European or Japanese manufacturer had the capability to bring motorcycles into full production that quickly. With motorcycles fast becoming a fashion item, and the life cycle of scooter models shortening, Aprilia's ability to launch models when opportunities were perceived and carefully target a niche segment of consumers provided a significant competitive advantage. In 1996 alone, Aprilia sold 18 models, each a top seller in its category.

One of Aprilia's top-selling models was the Scarabeo 50cc scooter. Designed by an in-house team to address the commuting needs of young urban professionals, the Scarabeo quickly became the best-selling motor scooter in Italy after it was introduced in 1993. It smartly combined functionality for the dense traffic of Italian city centers with a nostalgic look, which contributed to the transformation of the scooter into a fashion item. The success of Scarabeo and its fashionable retro look was so great that large manufacturers, Piaggio included, had to react quickly by introducing old-fashioned-looking models.

[11] "A sense of wonder: Aprilia's voyage of discovery," *Dealernews*, February 1998.
[12] Rossant.

Japanese Manufacturers

Japanese manufacturers had gained control of the scooter market in the 1980s with the introduction of high-tech models that suited a larger percentage of market requirements. Japanese "global products" were developed based on identifying the homogeneous needs across world markets and then building on those common points to offer a mass-produced product with superior quality and low manufacturing costs. The reduced manufacturing costs often translated into competitive prices or higher margins. Further, the focus on "global products" led to a longer product life than that of the niche products. And the broad range of models, from mopeds to motorcycles, helped to establish customer loyalty. Younger customers who purchased less-expensive bikes and were happy with them were more likely to return to the same company for their next purchase.

This global strategy for both markets and products also allowed Japanese manufacturers to gain substantial economies of scale in the production of their models. A Japanese model was regarded as successful after it passed the 140,000 units-per-year mark, whereas a European model was a hit after 50,000 units per year.

More than 50 kinds of motorcycles sold in Europe were imports, mainly from Japan (56% of 1994 imports). The percentage of imports from Japan was declining largely because Japanese manufacturers had transferred productive assets for large motorcycles to the East Asian newly industrialized countries (see **Exhibit 4** for production and export volume). Mopeds and scooters had a low unit value that did not justify the transportation costs of the finished product. Consequently, three Japanese manufacturers—Honda, Yamaha, and Suzuki—had developed European manufacturing and assembly facilities, both through ventures with local manufacturers and fully owned plants.

Experts estimated that Japan controlled about 15% of total European production through license agreements and financial holdings in local plants. Assembly operations of Honda, Yamaha, and Suzuki accounted for one-third of Spanish production alone. Most successful Piaggio competitors in Italy (Aprilia, Malaguti, etc.) purchased 50cc engines produced by Italian manufacturer Minarelli, under license from Yamaha.

Yamaha also controlled French manufacturer MBK and produced components in cooperation with other companies. Announcing an agreement to manufacture starter motors with Ducati Energia (an Italian motorcycle company) in 1995, the CEO of Yamaha Europe noted, "This is the first step in our strategy of transferring production of components from Japan to Europe."[13]

Similarly, Honda owned and managed a facility in southern Italy and owned a 25% share of Peugeot MTC. In June 1996, Honda announced it was establishing Honda Europe Motorcycle

[13] Ruth Sullivan, "Yamaha drives for expansion in Europe," *European* (June 2, 1995): 24.

in Rome to "oversee its motorcycle production and marketing operations in Europe."[14] The company would also manage R&D activities for European operations. In 1995, Honda began producing 50cc and 100cc scooters at a rate of 34,000 vehicles per year. Throughout 1996, the company added four additional scooters in the 250cc to 650cc range, and Honda planned to double production to 94,000 units in fiscal year 1996.[15]

The Decision

During 1996, Piaggio had devoted its resources to the development and engineering of an engine with low pollution and affordable manufacturing cost, and resources had already been committed to build a new automated plant for the engine's manufacture. The introduction of this green engine seemed the likely key element both to competition with Japanese manufacturers, who were expected to introduce it very soon and with European competitors, who did not have the resources to develop it.

Still, Agnelli and company management were not convinced that internal production of the engine was the best use of the company's resources. The sales forecast for the Vespa (in Europe) was for around 350,000 units per year—a figure less than the minimum production required for the engine's profitability. Piaggio's competitors were already beginning to equip their scooters with a similar Yamaha engine, signaling that Piaggio would have to quickly decide whether to follow through with its current plan.

[14] "Honda targets enhanced presence in European motorcycle market," *Nikkei English News*, June 25, 1996.
[15] "Honda (7267) expands European scooter business," *Nikkei English News*, December 10, 1996.

Exhibit 1

PIAGGIO (A)

Powered Two-Wheeled Vehicles—Definitions and Characteristics

Model	Description
Mopeds	Popular throughout Europe, mopeds are essentially bicycles with a supplemental motor, suitable for riding on short trips. Mopeds are simple-structured, cheap, and reliable vehicles. Though the sales of these vehicles may be considerably influenced by several external factors, the total number of mopeds sold annually in the European Union was 1.2 million units in 1995.
Scooters	Scooters typically feature a step-through frame and wraparound protection, which enhances their appeal to urban riders looking for a comfortable, sturdy, motorized two-wheeler. Scooters are also ideal for suburban commuting. Engine capacity generally varies from 50cc to 200cc.
Light motorcycles	Light motorcycles, whose engine capacity does not exceed 125cc, feature more power and a stronger frame than scooters, Because driver's license age restrictions are often lower for light motorcycles than for other vehicles, light motorcycles are popular with European teenagers. Models vary in suitability for different conditions: some are good for urban and suburban commuting, while others are also used as off-road vehicles.
Large motorcycles	Whether built for comfort or built for speed, large motorcycles attract buyers looking for an economical and versatile vehicle they can ride both short and long distances, whether as a daily vehicle or as a touring or sport bike.

Exhibit 2

PIAGGIO (A)

Powered Two-Wheelers—Vehicles per 1,000 in Population

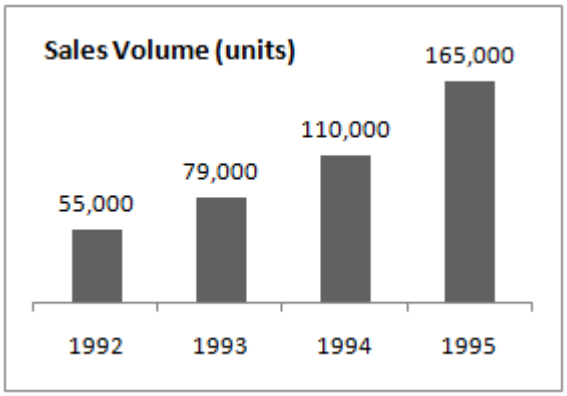
Country	1990	1991	1992	1993	1994	1995
Austria	71	68	67	66	66	68
Belgium	48	47	48	47	49	49
Denmark	34	35	36	35	35	35
Finland	34	33	33	32	31	30
France	57	55	53	52	52	53
Germany	41	52	48	44	46	49
Greece	38	43	49	56	56	58
Ireland	23	24	24	24	24	24
Italy	119	125	130	131	133	136
Luxembourg	31	35	42	51	49	49
Netherlands	44	43	44	44	50	52
Norway	48	47	47	46	45	44
Portugal	84	86	91	92	92	93
Spain	77	82	86	86	86	86
Sweden	28	28	28	28	28	28
Switzerland	112	109	105	103	101	101
UK	14	13	10	12	11	11
EUR 17	58	61	59	60	61	62

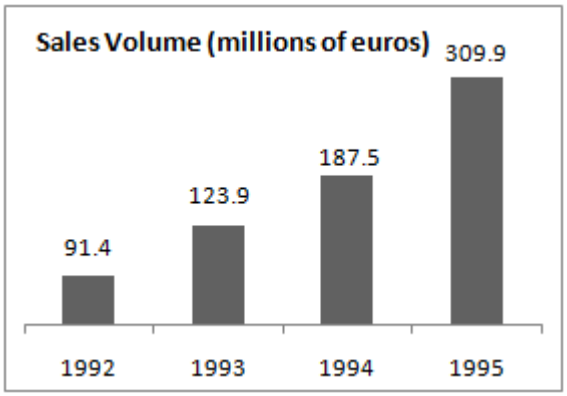
Source: “Solving the Urban Transport Dilemma: Powered Two-Wheelers—A Practical Alternative,” by Dr. Achim Diekmann, Universität Köln, Germany, March 1997.

Exhibit 3

PIAGGIO (A)

Aprilia's Sales Volume (1992–95)





Source: Created by case writer from Aprilia data.

Exhibit 4

PIAGGIO (A)

Japanese Domestic Production, Sales and Exports, 1993–1995

Domestic Production					
Year	50cc	51–125cc	126–250cc	251cc–	Total
1993	972,362	1,182,554	231,159	637,079	3,023,154
1994	874,919	1,062,560	237,368	550,421	2,725,286
1995	951,803	1,038,938	217,738	544,760	2,753,239
Exports					
1993	138,690	925,447	136,325	519,248	1,719,710
1994	88,002	741,486	132,850	445,518	1,407,856
1995	61,627	691,433	129,961	442,689	1,325,710

Source: http://www.japanauto.com/library/nfjm/nfjm v2n1 01.html (accessed November 30, 1999).