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LG Electronics Inc.:

Making Waves in the North American Market for Washing Machines

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It was a hot summer day in New York City. Five minutes outdoors in the thick humidity was enough to make anyone sweat, and city residents were running their air conditioners and washing machines around the clock. Meanwhile, twenty minutes away at the LG Electronics Inc. (LGE) R&D facility in Englewood Cliffs, New Jersey, the company's North American Product Planning (NAPP) team was trying to figure out a better way to help people clean their clothes.

The team had been working long hours for the past several months, designing a new flagship washing machine to help LGE make the most of its recently formed strategic alliance with Home Depot, and to support the company's goal of introducing a completely new washing machine platform at least once every two years. The team hoped that the new machine would help LGE finally gain distribution at Sears, America's largest home appliance retailer. After developing and testing new technologies, determining technical limitations, and conducting a great deal of consumer research, the team now faced the difficult task of finalizing the new washing machine's design. Team members needed to decide what features and functions to include, whether to build multiple models or just one, and whether or not to introduce one of two new concepts. The first was a single unit washer-dryer combination, and the second, a new and innovative steam washing technology that LGE had developed and patented¹. Furthermore, they needed to decide how the new washing machine should be priced and marketed.

In less than two weeks, the team would present its recommendations to Michael Ahn, President & CEO of North America Headquarters. The team knew that its washing machine design would need to support LGE's vision of being recognized as a premium brand, and becoming one of the world's top three electronics firms by 2010.

LG Electronics Inc.

Company History

LGE is part of the LG Group, a South Korean conglomerate headquartered in Seoul. The LG Group traces its origins to 1947 when In-hoe Koo founded the Lak Hui Chemical Industry ("Lucky Chemical Industrial Corporation") to produce a cosmetic called Lak Hui Cream (Lucky Cream). In 1952, Lak Hui began producing plastic lids for cosmetic containers, and soon diversified into other plastic products such as combs, soap cases, toothbrushes, tableware, and PVC pipes. Lak Hui introduced its own brand of toothpaste in 1954, followed by a variety of soaps and detergents in subsequent years.

In 1958, Mr. Koo founded the Goldstar Corporation Ltd. to enter the electronics industry. Goldstar produced Korea's first radio in 1959, and began exporting it to the United States and Hong Kong in 1962. Goldstar moved on to produce Korea's first electric fan, telephone, refrigerator, black and white TV, air conditioner, elevator, escalator, and washing machine within the next 10 years. In 1978, Goldstar reported that its cumulative exports had exceeded \$100 million, and the company soon expanded its operations into North America. Goldstar opened a manufacturing plant in Huntsville, Alabama in 1982; a business office in Sunnyvale,

1 LG Electronics held patents on more than 100 technical details of the steam technology in Korea, the US, and the major European markets until 2023.

California in 1983; a research and development center in Emeryville, California in 1984; and a second research and development center, which would also serve as the company's US headquarters, in Englewood Cliffs, New Jersey in 1989.

Revenues from the North American market steadily increased as Goldstar manufactured popular products such as VCRs, camcorders, stereos, microwave ovens, and TVs, leveraging its low cost, high quality manufacturing capability. However, despite this growth, North American consumers perceived Goldstar as a low quality brand. In an effort to secure a stronger, more distinctive corporate identity, the Lucky Goldstar parent company that controlled both Goldstar and Lak Hui, changed its name to LG in 1995, and renamed Goldstar LG Electronics Inc. or LGE. That year, LGE acquired Zenith, North America's largest electronics manufacturer, and began selling its products under the Zenith brand name, again targeting the low price tier. However, it was only in 2002 that LGE decided to launch the LG brand in North America, with the objective of penetrating the market more broadly and establishing a premium brand image.



Goldstar's first Washing Machine (1969)

By 2005, LGE had more than 66,000 employees working in 77 subsidiaries, and was the world's largest producer of CDMA mobile phone handsets, DVD players, optical storage devices, air conditioners, canister vacuum cleaners, and microwave ovens. That year, LGE reported sales of nearly \$25 billion, approximately 28% of the LG Group's total sales.

LGE has four business units: the Mobile Communications Company, the Digital Appliance Company, the Digital Display Company, and the Digital Media Company. The Digital Appliance Company produces home appliances including air conditioners, refrigerators, dishwashers, microwave ovens, vacuum cleaners, and washing machines. It operates manufacturing facilities in China, India, Korea, Mexico, Thailand, Turkey, the United Kingdom, and Vietnam. In 2005, the LG Digital Appliance Company reported sales of approximately \$10 billion.

Innovative Spirit

History of Innovation

LGE prides itself on having maintained an innovative spirit ever since Goldstar developed Korea's first radio in 1959. Following this feat, Goldstar went on to develop a long list of other "Korea's firsts" over the ensuing decades, including Korea's first silicon wafer in 1987 and Korea's first CDMA mobile phone system in 1995. More recently, LGE has developed several "world's firsts", such as the world's first Internet-enabled refrigerator in 2000, the world's first mobile phone that measures blood alcohol levels in 2005, and the world's first 100 inch LCD panel in 2006, which is listed in the 2007 Guinness Book of World Records.

Innovation through Design

In addition to producing technological innovations, LGE has always maintained a commitment to innovation through design. Goldstar was the first Korean company to hire industrial designers (1958), establish a design section (1960),





Speed of Innovation

LGE describes its business strategy as “fast innovation, fast growth”. Innovation is one of the four values that underlie the LG brand identity. The LG brand promises to provide tangible innovations that enrich the lives of its customers (see Exhibit 1). To support innovation, LGE not only spent approximately \$3.1 billion on R&D in 2005, but also implemented an innovation process, including a planned innovation pipeline. Its R&D facilities include over 30 R&D centers around the world, including the Englewood Cliffs, New Jersey facility, which is responsible for developing products for the North American market. LGE’s substantial investments in R&D allow it to maintain faster cycle times than many of its competitors in North America, who brought to market completely new platforms only every five to 10 years. The long cycle times allowed LG’s key North American competitors, such as Whirlpool and General Electric (GE), to depreciate development costs over a long period.

North American Market for Washing Machines

Market Size

Washing machines are a key item in the large appliance or white goods market. The US market has historically been dominated by top-loading washing machines. However, this has started to change in the new millennium as front-loading machines with similar capacity have experienced rapid growth. Although the total annual demand for washing machines in North America grew from 7.75 million units in 2002 to 8.93 million units in 2005, at an average annual rate of 4.9%, the demand for front-loading machines grew at a staggering annual rate of 21.3% during the same period, with annual sales increasing from 1.38 million units in 2002 to 2.44 million units (~25% of total demand) in 2005 (see Exhibit 2).

Major Brands

The North American market for washing machines is dominated by a handful of big brands. In 2002, the year LGE decided to launch the LG brand in the US, Sears’s Kenmore brand had the highest volume share with 34.4%. It was followed by Maytag with 26.5%, Whirlpool with 17.6%, Bosch with 1.3%, and all others (e.g., Amana, Asco, Frigidaire, GE, Haier, Miele) holding the remaining 20.2%.

LGE entered the market with front-loading machines, a category that at the time accounted for only 10% of all washing machines sold in the US. The decision was driven by two considerations. First, although top-loading machines accounted for 90% of washing machine sales, they sold for as little as \$299, whereas large capacity front-loaders sold for \$1,000 or

more. This price difference was important for LGE, since it incurred a cost of \$100 per unit for shipping its washing machines from Korea to North America. Second, with growing incomes and a taste for European designs, LGE believed that front-loading washing machines would be a growth category. At the time, Maytag was the only company which had a long-term presence with a large capacity (3.4 cu. ft.) front-loading machine. In late 2001, Whirlpool had started manufacturing a large-capacity (3.7 cu. ft.) washing machine which was distributed by Sears under its house brand, Kenmore. By late 2002, the same machine was also available under the Whirlpool name. European competitors (e.g., Bosch, Electrolux, Miele) competed with smaller capacity front-loading washing machines (2.2-2.5 cu. ft.) that were popular in Europe, and collectively accounted for 10% of the front-loading market.



LG entered the North American market in late 2002 with a 3.72 cu. ft. capacity machine with a Modified Energy Factor (MEF)² of 2.08 and a Water Factor (WF)³ of 4.1. To maximize the association with Europe and minimize the connection to its Korean roots, which had negative quality connotations in the US, LGE called its front-loading washing machines TROMM, a name derived from the German word for drum. The machine's high efficiency qualified LG to receive a \$100 tax credit from the US Department of Energy for each unit sold, and also to receive the ENERGY STAR label. The latter was important, since, in many

geographic areas, consumers who purchase appliances that carry the ENERGY STAR label receive discounts on their utility bills, in addition to ongoing savings in utility consumption. Moreover, the key competing machines also had this rating.



The LG machine incorporated a patented direct-drive technology that was 20% less noisy, due to a lower level of vibration, than most competing washing machines, which relied on belt drives. Moreover, the direct-drive technology consumed less power than most belt drives. Unlike the typical front-loading washing machines that were prevalent in Europe, the LG machine had controls mounted on a raised rear panel. This design catered to US consumers who were used to top-loading machines with this type of control panel. In 2003, LG priced the machine at \$999, while Whirlpool and Kenmore front-loaders sold for \$1,099, and Maytag occupied the premium spot with a price of \$1,299.

Upon entering the North American market in late 2002, LGE faced several challenges. First, although LGE had advanced technology, it did not have a good understanding of how demanding American consumers were in terms of fit, feel, and finish. Achieving a desired level of fit, feel, and finish not only required understanding consumers' expectations, but also managing operations to consistently meet or exceed these expectations. Second, since LG was unknown in the US, it would take time to build the brand. To make matters tougher, 2003 also saw the entry of European competition in the large capacity front-loading category, with Bosch and Frigidaire introducing 3.5 and 3.4 cubic foot capacity machines, respectively, in the last quarter.

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- 2 MEF is a measure of the number of cubic feet of laundry that can be washed and dried with 1 kilowatt hour of electricity. A higher MEF indicates relatively greater efficiency.
 - 3 WF is a measure of water use. It is the number of gallons of water/cycle/cubic foot of laundry.

That year, new management at GE decided to cap development investments in white goods, and the appliance group at GE approached LGE to manufacture its top-loading washing machines.⁴ GE had a deep understanding of North American consumers and the expertise to manage operations in order to consistently deliver on their fit, feel, and finish expectations. By becoming an original equipment manufacturer (OEM) for GE, LGE benefited from this GE know-how.

In 2004, LGE introduced a European-style, front-loading washing machine with the controls on the front face, using the same platform that it launched in late 2002. The hope was to capture the imagination of US consumers who perceived European products as being more sophisticated and superior in quality. The new machine was also significantly more efficient than the one launched in 2002 (MEF: 2.42/WF: 3.6). Moreover, LGE offered three models with different levels of fit, feel, and finish. The mid-level model, which had the highest sales, was priced at \$1,099, while the top-of-the-line model was priced at \$1,299. LGE also sold a very limited number of units of a base model, which did not include an internal water heater, at \$999. Thus, LG's models covered all three price points within the market for large capacity front-loading machines. To further distinguish itself, LGE launched a model with a black finish in the hitherto mostly white, white goods market. Furthermore, in 2004, LGE also launched a smaller capacity machine with two models priced at \$799 and \$899, in order to create a floor price for the LG brand and to protect it from inroads by European brands such as Frigidaire, which sold some machines priced between \$599 and \$699. By the end of 2004, LGE had established itself with a 5% volume market share. Meanwhile, the front-loading market had grown to 15% of total washing machine sales (see Exhibit 2).



By 2005, LGE's volume market share had risen to 10.8%. Meanwhile, in the three-year period from 2002, Kenmore's volume market share fell to 18.5% (-46.2%), Whirlpool's rose to 18.5% (+6.3%), Maytag's fell to 18.5% (-30.2%), and Bosch's rose to 2.4% (+84.6%), with all other brands accounting for the remaining 20.9% (see Exhibit 2). The front-loading market continued to grow, and was expected to account for approximately 25% of all washing machines sold in 2005. Thus, to further consolidate its position, LGE introduced a 3.82 cubic foot capacity machine using the same platform as that of the existing models.

Distribution

Distribution is a key issue in the North American market, as it is controlled by a few powerful distributors (see Exhibits 3 and 4). Sears is the largest appliance retailer, and markets its own brand of appliances under the Kenmore name. Other large national appliance retailers include Lowe's, Best Buy, and Home Depot. These large, risk-averse distributors are typically hesitant to invest in a new, unknown appliance brand. For example, they had earlier shunned some Japanese manufacturers who had attempted to enter the US market with products that they were successfully selling elsewhere in the world.

⁴ LGE had a relationship of approximately 20 years in duration with GE, which included a joint venture, since dissolved, to make microwave ovens for the Chinese market.

To make matters more difficult, several of the national retailers had alliances with specific manufacturers. For example, Whirlpool had an alliance with Lowe's, and also with Sears for which it manufactured Kenmore-branded appliances. Similarly, GE had an alliance with Home Depot. Manufacturers typically provide their allied retailers with a distribution exclusivity period each time a new model is launched, retailer-specific marketing support, and exclusive price brands (e.g., Whirlpool Roper, GE Hotpoint) for which manufacturer margins are very slim. In exchange, retailers typically provide their allied manufacturers with preferential floor space, special displays for flagship models, and merchandising support. Furthermore, as part of an alliance, retailers typically support a certain level of sales and share customer data and insights, sales and market trends, and new product road maps for their proprietary brands, thereby creating high entry barriers for newcomers.

From its long presence in the US market for small appliances, LG realized that it needed a clear strategy for gaining distribution for its washing machines. From the data it had gathered (see Exhibits 3, 4, and 5), the regional distributors such as P.C. Richard & Son, Fry's, hhgregg, and American TV, which struggled against the big-box retailers, were the most obvious target for gaining initial distribution. These distributors were willing to take risks on innovative new products that had the potential to attract customers to their outlets. Moreover, they were an attractive option for LG, as customers typically perceived these retailers as providing a better shopping experience and better after-sales support than many of the big-box retailers. Furthermore, the shop floor sales assistants at these stores were typically well trained and worked on commission, creating an effective opportunity for a push strategy, which was important for a new entrant. However, LG realized that although these retailers might provide initial market access, the goal of establishing a premium LG brand could only be achieved by gaining broad national distribution, which would require penetrating the big-box retailers.

LG's analysis of the four major big-box retailers revealed that, in many ways, Sears was the most attractive. It had approximately 1,900 outlets nationwide (~60% franchised), of which over 500 remained open 24 hours per day, 7 days per week. Sears accounted for approximately 30% of the white goods business, and its customers were typically less price sensitive than those of the other big-box retailers. Moreover, Sears's shop floor sales assistants were well trained and worked on commission. However, Sears had a longstanding relationship with Whirlpool, and its primary focus was its own Kenmore brand, which was the dominant white goods brand in the US.

Lowe's and Home Depot were both home centres. Lowe's had approximately 750 outlets, and Home Depot had approximately 1,200. Neither retailer had sales assistants on the shop floor. The key difference between the two was that Home Depot was purely price oriented and only stocked a limited line of GE and Maytag products, whereas Lowe's carried a full range of brands and offered the consumer a choice of both low- and premium-priced products. Visits to Lowe's and Home Depot outlets by the NAPP team revealed that whereas Lowe's invested in displaying its white goods, at Home Depot white goods almost appeared to be substantially less of a priority (see Exhibit 6). The NAPP team members also felt that the shoppers at Home Depot were from a lower socio-demographic strata than LG hoped to target.

Best Buy focused on consumer electronics and home appliances, including white goods. It was the national leader in audiovisual products. It had earlier partnered successfully with

Samsung within that domain, and was thus typically more open to foreign entrants than the other big-box retailers. Best Buy tended to rely heavily on promotion oriented store advertising to generate store traffic. These efforts were supported by its shop floor sales assistants. However, these sales assistants typically appeared to be less well trained than those at Sears. Best Buy's customers were typically younger, more tech savvy, and more affluent than those of the other big-box retailers. A full 31% were under the age of 34, and 67% earned \$50,000/year or more. These customers patronized Best Buy partially because it offered fresh and stylish products. Importantly, Best Buy did not have an alliance with any white goods manufacturer, and was thus struggling in the white goods category.

LGE created a distribution road map that prioritized the different retailers based on its assessment of the attractiveness of each account and the difficulty of acquiring it. The road map prioritized Best Buy as the first national distributor to target. It was followed by Lowe's as second, and by Sears as third. Home Depot did not feature in this initial road map as LGE believed that, given the strong and direct competition between Lowe's and Home Depot, it was unlikely that both retailers would be willing to carry LGE's products, and thus it had to choose between the two.

Once it had secured distribution with the regional distributors, LGE aggressively approached Best Buy. In late 2002, as the first LG TROMM machine hit the market, LGE concluded a deal with Best Buy. LGE's promise of a newly styled washing machine with a European style front control panel within a year led Best Buy to sign on as a national distributor of LG brand products and to become LGE's strategic partner in white goods. LGE leveraged this new relationship to the fullest. By May 2003, the rear panel washing machine was on Best Buy's floor. LGE invested heavily in salesperson training, including frequent in-store training sessions, which were monitored for effectiveness using feedback submitted through a website. It also invested in co-branded advertising, public relations, and events, and was able to secure end-cap displays for its flagship model (see Exhibit 7).

In January 2005, sales volumes indicated that LGE had acquired more than 5% of the washing machine market. It was considering approaching Lowe's, the next big-box retailer from its distribution road map, when it learned of new developments at Home Depot. Home Depot had been struggling in the white goods business since it carried only GE and Maytag brand appliances. It had also come to realize that margins were higher in white goods than in many of the other categories in which it participated. In late 2004, Home Depot decided to leverage the opportunity provided by these higher margins. To do so, it believed that it needed to carry a broader range of brands and models covering both high and low price points, and that it also needed to devote more and better space to appliances in order to create more appealing displays. In summary, Home Depot had realized that it needed to create a better buying experience for appliance customers, had decided to make the requisite investments, and was on the lookout for a suitable new white goods partner. Given this new direction, Home Depot now appeared more attractive to LG than did Lowe's, since Home Depot had a larger network of stores and its consumer base was typically more up-market. LGE thus approached Home Depot. GE, Home Depot's strategic partner in white goods, did not object, since it had a longstanding relationship with LGE, and believed that it would benefit from a better appliance department at Home Depot. Thus, LGE formed a second strategic alliance with Home Depot, gaining access to the lucrative home improvement channel.

Developing the New Platform for 2006

Competitors

With one year remaining before the planned launch of the next new platform – a platform that LGE thought would be crucial both for cementing its long-term viability and for securing a premium position in the North American market – the NAPP team was working in earnest. It had identified six premium (\$1,200+) front-loading washing machines with which the new platform would compete: the Whirlpool Duet, Samsung WF306LAW, Bosch Nexxt, Maytag Neptune, Kenmore HE4t (and HE3t), and KitchenAid Ensemble (see Exhibit 8 for specifications).

Whirlpool Duet

The Whirlpool Duet, available in two models, featured a 3.8 cubic foot wash capacity, 13 automated wash cycles, and an MEF of 2.17. The top-of-the-line Duet had a maximum spin speed of 1,250 rpm, and retailed for \$1,399. A simpler model, with fewer features and a 1,050 rpm maximum spin speed, retailed for \$1,099. Qualitative research at LGE had revealed that focus group participants liked the Duet's organized control panel, but disliked its large number of buttons, which they said appeared complicated.

Samsung WF306LAW

Samsung, a Korean electronics manufacturer, had entered the North American market a few years before LGE, and had built a strong reputation, particularly in home electronics. Samsung's washing machine featured a 3.79 cubic foot wash capacity, 13 automated wash cycles, and a maximum spin speed of 1,100 rpm. It retailed for \$1,299. Focus group participants did not evaluate the Samsung washing machine.

Bosch Nexxt

The Bosch Nexxt featured a 3.7 cubic foot wash capacity, 15 automated wash cycles, and a maximum spin speed of a 1,200 rpm. It was the leader in energy efficiency (MEF: 2.2) and noise level (60 dB). The top-of-the-line Nexxt retailed for \$1,299, and a model with fewer features and a 1,050 rpm maximum spin speed, retailed for \$1,099. LGE's qualitative research had revealed that focus group participants liked Nexxt's control panel, which was located on the top rather than the front of the machine, and appeared easy to use. However, they disliked the machine's overall design, which they said appeared old and small.

Maytag Neptune

The Maytag Neptune featured a 3.8 cubic foot wash capacity, a tilted drum, and a maximum spin speed of 1,200 rpm. The top of the line Neptune featured a liquid crystal display (LCD) with touch-screen controls, and retailed for \$1,399. An equivalent model, with a light emitting diode (LED) control panel, retailed for \$1,049. Focus group participants did not evaluate the Neptune.

Kenmore HE4t

The Kenmore HE4t was manufactured by Whirlpool, Sears's strategic partner, and utilized the same platform on which the Duet was built, with some feature modifications. Thus, the HE4t featured a 3.8 cubic foot wash capacity and a maximum spin speed of 1,300 rpm. It was available in two models. The top-of-the-line HE4t retailed for \$1,499, and a simpler model with fewer functions retailed for \$1,399. Additionally, Kenmore offered the HE3t, which had a maximum spin speed of 1,050 rpm, for \$1,349. Focus group participants said that they liked the HE4t's modern look, easy-to-use controls and door handle, and easy-to-read two-tone color controls. However, they said that they disliked the large amount of printing on the control panel, which they said appeared complicated.

KitchenAid Ensemble

The KitchenAid Ensemble featured a 3.7 cubic foot wash capacity, 12 automated wash cycles, an MEF of 2.17, and a maximum spin speed of 1,200 rpm. It retailed for \$1,499. KitchenAid is the flagship brand in Whirlpool's brand portfolio. It has a strong reputation for quality, particularly in kitchen appliances, as the brand name suggests. KitchenAid produced only a single model, the Ensemble, in the washing machine category. Focus group participants did not evaluate the Ensemble.

Consumer Research

Between 2001 and 2005, LGE's NAPP team invested in several consumer research studies in an effort to better understand the North American market. These studies examined emerging social and consumer trends; consumers' perceptions of their currently owned washing machines; consumers' preferences for a variety of washing machine features, functions, and styles; and the types of consumers who would be likely to purchase a premium front-loading washing machine.

Social and Consumer Trends

The NAPP team commissioned a report on emerging US social and consumer trends with the goal of identifying product characteristics that best matched these trends. The report was based on four in-depth interviews with advertising executives and journalists in New Jersey and Los Angeles, each of whom had more than seven years of experience. The study identified four major trends.

Bringing Outside Experiences In

According to the first trend, bringing outside experiences in, consumers are bringing experiences that were once enjoyed in the public domain into the private domain of their homes. For example, whereas in the past consumers would go out to drink a draft beer, have a cappuccino, or watch a movie, the study suggests that they are now more likely to engage in these activities at home. Furthermore, the study argues that the 9/11 terrorist attacks intensified this trend by eliciting a desire among consumers to isolate and insulate themselves within the security of their own homes. The study states that the effects of this trend include increased investment in high-quality appliances with features that were previously available only in professional equipment.

The Home as a Sanctuary

According to the second trend, the home as a sanctuary, consumers are modifying their homes to accommodate the new types of products that they are purchasing. The study states that the effects of this trend include the expansion of kitchens, master bedrooms, living rooms, and laundry rooms, and the creation of multi-functional rooms and transitional spaces. In particular, the trend includes remodeling projects that move the laundry room to the main floor and, in many cases, create an enlarged laundry room that features ample space for hanging clothes, counter space to facilitate folding and storage, and cabinets for keeping linen and storing cleaning products. The emphasis of these remodeling projects was on creating a bright and quiet working area (see Exhibit 9).

Interest in East Asian Styles

According to the third trend, interest in East Asian styles, as the US has become more multicultural, East Asian foods, entertainment, alternative medicines, and religions have become more popular. As a result, East Asian values of harmony, balance, and simplicity have permeated consumers' lifestyles and influenced product design. The study states that the effects of this trend include a growing belief that the biggest or most expensive is not always the best, and preferences for simple, sleekly designed products with smooth lines and curvature.

Influence of Technology

According to the fourth trend, influence of technology, consumers are using an increasing number of products that are very innovative and highly technical in order to simplify everyday tasks at home and at work. In other words, technology is becoming a key part of their lifestyle. Furthermore, the study argues that consumers prefer consolidated products – devices that perform many functions – thereby allowing the user to multi-task. The study states that the effects of this trend include preferences for smarter products that can do more and help consumers be more efficient.

Consumers' Perceptions of Their Washing Machines

Between 2001 and 2005, the NAPP team commissioned three studies of consumers' perceptions of their currently owned washing machines. One study examined participants' reasons for choosing the washing machines that they currently owned. Two studies explored participants' satisfactions and dissatisfactions with their washing machines and with the entire clothes washing process.

Reasons for Purchase

In one study, 125 respondents listed and rank-ordered their reasons for choosing the washing machines that they currently owned. The most commonly listed reason listed by respondents was their belief that the machine would clean laundry well. Other commonly listed reasons included the machine's large capacity, brand, high energy efficiency, ease of use, and overall design (see Exhibit 10). The study also documented the relative importance of various purchase drivers when making the next purchase (see Exhibit 11) and the current perceived

performance of the LG TROMM and the main competing model, the Kenmore HE4t (see Exhibit 12).

Satisfactions and Dissatisfactions

In another study, 120 women between the ages of 24 and 49, who owned and used a washer and dryer and had a household income of at least \$60,000 per year, rated their satisfaction with 20 characteristics of their currently owned washing machines. The results indicated that, on average, respondents were most satisfied with their washing machine's colour, manufacture, price, frequency of trouble, and durability (see Exhibit 13). Of these five most satisfied characteristics, respondents listed price as the most important, followed by durability, manufacture, colour, and frequency of trouble. Furthermore, the results indicated that respondents were, on average, least satisfied with their washing machine's noise level, filtering capabilities, diversity of functions, energy consumption, and water efficiency. Of these five least satisfied characteristics, respondents listed water efficiency as the most important, followed by diversity of functions, filtering capabilities, energy consumption, and noise level.

In a separate qualitative study, focus group participants discussed their dissatisfactions with each stage of the laundry washing process. Their primary dissatisfactions were the need to have many of their delicate clothes professionally dry cleaned, that hot water cycles often shrank and wrinkled clothes, that powder detergent did not dissolve well, that rinsing did not remove all of the detergent from clothes, and that spin cycles were too weak and left a lot of water in clothes. Focus group participants also discussed future washing machine features that could alleviate these dissatisfactions (see Exhibit 14).

Preferences for Washing Machine Features, Functions, and Styles

The NAPP team also commissioned one qualitative study and one quantitative study to identify consumers' preferences for specific washing machine features, functions, and styles such as top-loading versus front-loading, transparent door versus non transparent door, front versus rear control panel, LCD versus LED display, combination washer and dryer versus separate units, and others. The qualitative study also sought to determine the most important purchase criteria among consumers in relatively younger and older age groups.

The qualitative study consisted of focus group discussions with two groups of eight to ten women between the ages of 21 and 34 ("younger"), and two groups of eight to ten women between the ages of 35 and 49 ("older"), who evaluated prototype LG washing machines. Participants were home appliance decision makers from Livingston, New Jersey or Santa Monica, California, with a household income greater than \$60,000 per year, who indicated that they intended to purchase a premium washing machine priced above \$700 within the next six months. The quantitative study was a survey of 110 home appliance decision makers between the ages of 21 and 49 from the same population.

Front-Loading Machines

Focus group participants expressed three primary dissatisfactions with front-loading washing machines. First, loading or unloading these machines requires bending down, which can be uncomfortable. Second, it can be easy for small children to climb inside a front-loading

machine. Third, since most front-loading machines cannot be opened during a cycle, the use of some special types of detergents that need to be added mid-cycle is typically not possible with these machines.

Door

Focus group participants evaluated front-loading prototypes that had a transparent door and others that did not. Participants in the younger groups said that they liked the transparent door and thought it looked unique, whereas participants in the older groups said that they did not like the transparent door. Participants in both age groups agreed that the designs without the transparent door were not particularly striking, but did look sturdy and durable.

In the quantitative study, 70.9% of respondents indicated that they preferred a prototype design with a transparent door to an identical prototype design with a non-transparent door. Respondents also listed reasons for their preferences. Many respondents who preferred the design with the transparent door indicated that they liked the idea of being able to look inside the machine while it was running and that the transparent door enhanced the overall appearance of the machine. Respondents who preferred the design with the non transparent door indicated that they were concerned that the transparent panel might break.



Control Panel

Focus group participants evaluated front-loading prototypes in which the control panel was located on the front face of the machine and others in which it was located on a raised rear panel as is common on top-loading machines. Participants in both the younger and older groups expressed high liking for the rear control panel. Common reasons for liking the rear control panel were that it was easy to see, was difficult for children to reach, could keep things from falling behind the machine, and was where one would expect it to be. Participants in both the younger and older groups expressed medium liking for the front panel. A common reason for liking the front panel was that it would be easy to reach. However, this was also a common reason for disliking the front panel, as participants expressed concern that it would also be easy for children to reach.

In the quantitative study, 53.6% of respondents indicated that they preferred a prototype design with a front control panel to an identical design with a rear control panel. Respondents preferred the front control panel on prototype designs both with and without a door window.

LCD vs. LED Display

Focus group participants evaluated front-loading prototypes that had an LCD display and others that had an LED display. Participants in the younger groups stated that they preferred the LCD because it would be convenient to use and would save time, whereas participants in the older groups stated that they preferred the LED display because it would be easier to use.

In the quantitative study, 57.3% of respondents indicated that they preferred a prototype design with an LCD display to an identical design with an LED display. However, when these respondents were then asked which they would prefer if the model with the LCD cost \$150 more, only 28.2% indicated that they preferred the LCD model. Respondents also listed reasons for their preferences. Respondents who preferred the design with the LCD display indicated that it looked more modern, that it would offer more features and functions, and that it would be easier to program and use. Respondents who preferred the design with the LED display indicated that the LCD would be less durable and harder to program and use.

Consumer Segments

A national study with a sample size of 340 respondents revealed four broad segments: Environment Driven, Fashion Conscious, Homemaker, and Convenience & Budget Conscious. These segments varied in terms of price sensitivity and preference for style versus convenience. Furthermore, within each broad segment there were differences between respondents who preferred front-loading machines and those who preferred top-loading machines. Exhibit 15 depicts the various segments on a perceptual preference map along with the location of the current owners of front-loading machines.



Current owners of front-loading machines (5%) were mostly young married couples with active lifestyles. They were affluent, well educated, and style and environmentally conscious, and valued technology.

Compared to current owners, members of the Environment Driven segment (22%) were mostly older and less affluent. They typically had few children in the household. They bought organic food, were concerned about the environment, and tried to conserve water and energy. They believed in taking good care of their clothes but were only moderately involved in doing laundry. The key differences between those who preferred front-loading machines or had no format preference (8%) and those who



preferred top-loading machines (14%) were that the former were more likely to be widowed or divorced, health conscious, and fond of the outdoors, whereas the latter were more likely to be married, home owners, fond of activities such as cooking for the family, and anxious about doing laundry.

Members of the Fashion Conscious segment (29%) were mostly young, affluent, highly educated, single, and from ethnic minorities. They valued style and technology, were fashion conscious, and saw themselves as trendsetters. They had a very high and favourable self image, considering themselves to be athletic, attractive, and sexy. They sought prestige and bought products as a way to acquire it. They did not enjoy doing laundry, and were quite uncertain and nervous about doing it. The group with a greater preference for front-loading machines or had no format preference (12%) included a significantly larger proportion of males than did the group with a greater preference for top-loading machines (17%).



Members of the Homemaker segment (20%) were mostly middle aged families with kids living at home, who were less educated and less affluent than current owners. Most were family oriented yet ambitious, and considered activities around the home to be important. Most enjoyed



cooking for the household, valued cleanliness, and felt completely in control, happy, and proud when doing laundry. Although members of this group were moderately price sensitive, they looked for washing machines that were good for their clothes and had all the options, particularly valuing large capacity and ease of loading/unloading.

Members of the Convenience and Budget Conscious segment (24%) were mostly young, married couples with children living in the household. They were typically less educated than current owners, and many lived from pay check to pay check. Most held conservative family values and were patriotic. They valued technology but were highly price sensitive. Most considered doing laundry to be a chore, and found it tiring.

New Concepts

The NAPP team was considering bringing one of two new concepts to market. The first was a combination washer and dryer. This was a single unit that was capable of both washing and drying clothes. Although a combination washer and dryer would be a novel concept for North American consumers, a combination model had been available in the Korean market since the late 1990s. The second new concept was a conventional washing machine that was also capable of steam cleaning clothes.

Combination Washer and Dryer

Focus group participants evaluated a prototype combination washer and dryer. Both the younger and older participant groups expressed medium liking for this design. They liked the novelty that the machine would automatically dry the clothes after washing them and that it would take up less space than a separate washing machine and dryer. However, they disliked the fact that it would take longer to do several loads of laundry with the combination machine than with separate units, since one load could not be washed while another was drying. Furthermore, some participants expressed concern that the machine would be more likely to break down than a separate washing machine and dryer.

In a quantitative study, 87.5% of respondents between the ages of 21 and 39 indicated that they preferred a prototype combination design to an identical design in which the washing machine and dryer were separate, whereas 62.9% of respondents between the ages of 40 and 49 indicated that they preferred the combination design. When respondents were told that the drying performance of the combination design would be equivalent to that of a \$300 dryer, preference for the combination dropped to 78.9% in the 21 to 39 age group and to 50.5% in the 40 to 49 age group. Finally, when respondents were told that the combination design would only have 70% of the capacity of the separate washing machine, preference for the combination dropped to 31.2% in the 21 to 39 age group and to 29% in the 40 to 49 age group.

Steam Technology

In 2001, LGE began developing a steam generator that would make it possible to steam clean clothes inside a conventional washing machine. By 2005, it had perfected the technology, and lab tests indicated that it could provide ten benefits compared to traditional wash cycles: (1) increased energy efficiency, (2) decreased water consumption, (3) decreased cycle time, (4)

suitability for a much broader range of fabrics, (5) decreased damage to fabrics, (6) increased whitening power, (7) increased sanitization power, (8) increased odour removal, (9) elimination of all proteins to make clothes hypoallergenic, and (10) wrinkle reduction. The NAPP team speculated that a short, five to 20 minute steam cycle without detergent could be used to quickly freshen up delicate clothes.

The team conducted a focus group discussion and a quantitative survey to investigate consumers' perceptions of steam cleaning. Focus group participants identified four major advantages that they expected steam cleaning would provide: (1) potentially increased cleaning power compared to hot water, (2) decreased water consumption, (3) cost savings, and (4) wrinkle reduction. These participants also identified two major disadvantages that they expected would be associated with steam cleaning: (1) potentially decreased cleaning power compared to hot water, and (2) potential safety hazards, especially the possibility that the steam generator could explode, although the combination of the quality construction materials, a water level sensor, a thermostat switch, and a thermal switch, made the washing machine completely safe for consumers. . Additionally, several focus group participants wanted to know more about steam cleaning technology in order to decide whether or not they would purchase it. They indicated that they would be interested in reading a Consumer Reports article on the subject.

In the quantitative study, participants were asked to indicate whether they perceived steam as providing a set of benefits. The key finding was that 80% of respondents perceived steam to be energy saving, 50% perceived steam to be refreshing, 32% perceived it to be whitening, and 26% perceived it to be sanitizing. In the same study, when respondents were asked to indicate whether hot water or steam would offer superior sanitizing, 48% indicated that they expected steam would sanitize clothes better than hot water. In response to a similar question, 31% of respondents indicated that they expected the overall cleaning performance of steam to be better than that of hot water. These respondents were also given a list of six steam benefits and asked to rate their importance on a 10-point scale in which 10 represented "very important". Cleaning performance received an average rating of 9.25, followed by colour performance/gentleness with a rating of 9.06, odour elimination with a rating of 9.05, energy saving with a rating of 8.74, freshening/removal of wrinkles with a rating of 8.54, and sanitization with a rating of 8.52. The data also suggested that the benefits of cleaning performance and colour performance reflected a single underlying dimension: whitening power, whereas odour elimination and wrinkle removal reflected a different single underlying dimension: refreshing ability.

Willingness to Pay

Most recently, the NAPP team had commissioned a study to assess consumers' willingness to pay for washing machines as a function of the features offered. The study, based on a sample of 125 respondents, assessed how much consumers were willing to pay for improvements in capacity and spin speed, for different types of materials, and for different features, including a built-in drying heater and the new steam technology (see Exhibit 16). The team hoped that the findings of this study would provide guidance on pricing, once the feature configuration for the machine had been finalized.

The Decision

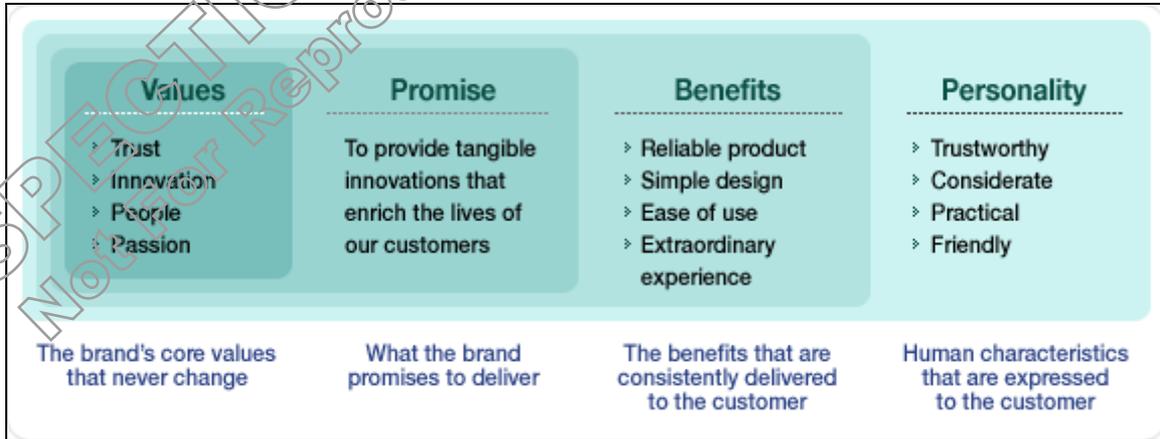
All this information was on the table as LGE's NAPP team finalized the design and marketing plan for its latest washing machine. Some things seemed certain. The team had a firm grasp on the size of the North American market for top-loading and front-loading washing machines, a feel for the strength of LGE's competitors such as Kenmore and Whirlpool, a solid distribution strategy that guaranteed access to at least 30% of the market, and a good understanding of changing US energy regulations. Furthermore, the team had invested in consumer research that gave it a picture of emerging US consumer and social trends, consumers' primary reasons for choosing a particular model of washing machine, consumers' satisfactions and dissatisfactions with the machines that they already owned, and the major North American consumer segments

However, many difficult decisions needed to be made. Although the team had studied consumers' perceptions of several washing machine features, functions, and styles, the results did not yield a picture of what the perfect machine would look like. Younger and older consumers seemed to have different preferences, and also appeared to focus on different criteria when making purchase decisions. The team wondered whether they should focus on one of the segments, compromise among them, or accommodate them all by introducing more than one model. Second, some features had both advantages and disadvantages. Weighing the advantages and disadvantages was difficult, but decisions regarding which features the new model(s) should include and what the marketing efforts should focus on had to be made. The team would also have to decide on the pricing of the new model(s), keeping in mind LGE's two key goals: being recognized as a premium brand, and becoming one of the world's top three electronics firms by 2010.

The stakes were high. LGE was counting on the success of this new washing machine. It wanted to make the most of its recently formed strategic alliance with Home Depot, and to gain distribution rights for the entire LG Digital Appliance Company at Sears, America's largest and most powerful home appliance retailer. Decisions had to be made and made soon; the meeting with Mr. Ahn was just two weeks away!

Exhibit 1
LGE Brand Overview, Values, and Promise

LGE Brand Overview



LGE Values

<p>Trust</p> <p>We are honest and responsible. We always keep the promises we make to our customers in our bid to become the world's most trusted brand.</p>	<p>Innovation</p> <p>We provide the most innovative products and services. Our innovations are made not for technology's sake, but for our customers' benefit. From the most basic features to the most sophisticated technology, our products are designed to give our customers substantial value (technology for customers, not for engineers).</p>
<p>People</p> <p>Respecting and caring for our customers is the driving force behind our philosophy in human-centric product development. Respecting and caring for our employees make this a reality.</p>	<p>Passion</p> <p>We are very passionate about providing products and services that satisfy the unmet needs of customers, as well as those potential needs they have yet to recognize.</p>

LGE Promise

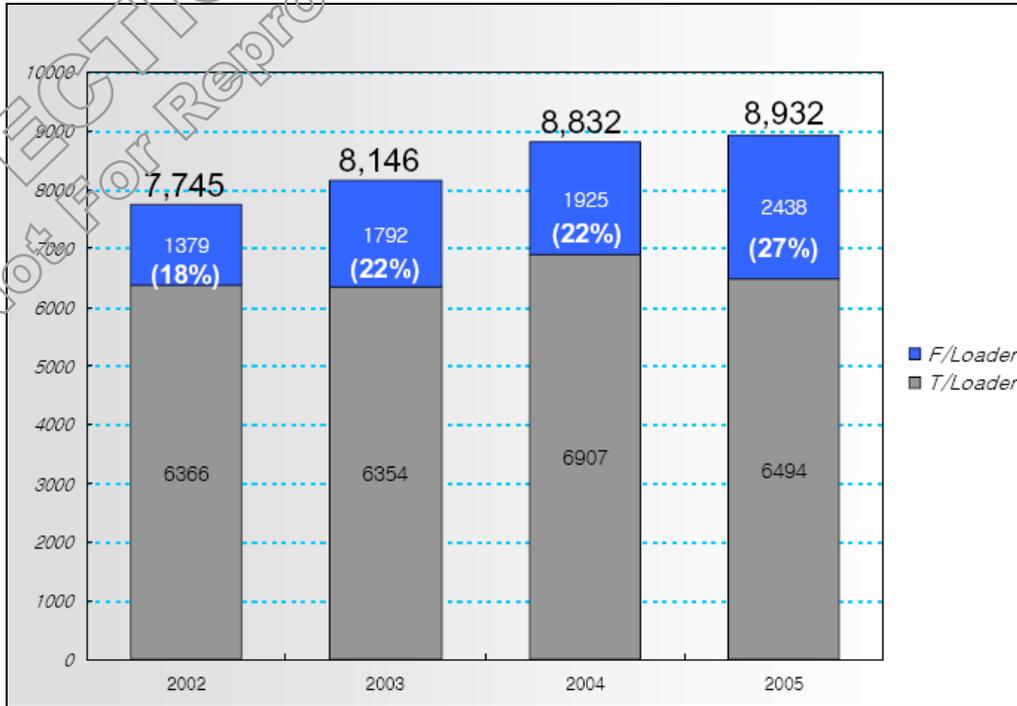
" LG provides tangible innovations that enrich the lives of customers."

With our expertise in all areas of electronics, LG promises to deliver tangible benefits to our customers. Tangible benefits include our relentless attention to all aspects of our products, from the most basic features to the most sophisticated technology implemented to improve people's lives. We passionately dedicate all our resources to providing timely and consistent innovations to keep the trust we have earned from our customers and to continue giving them full satisfaction.

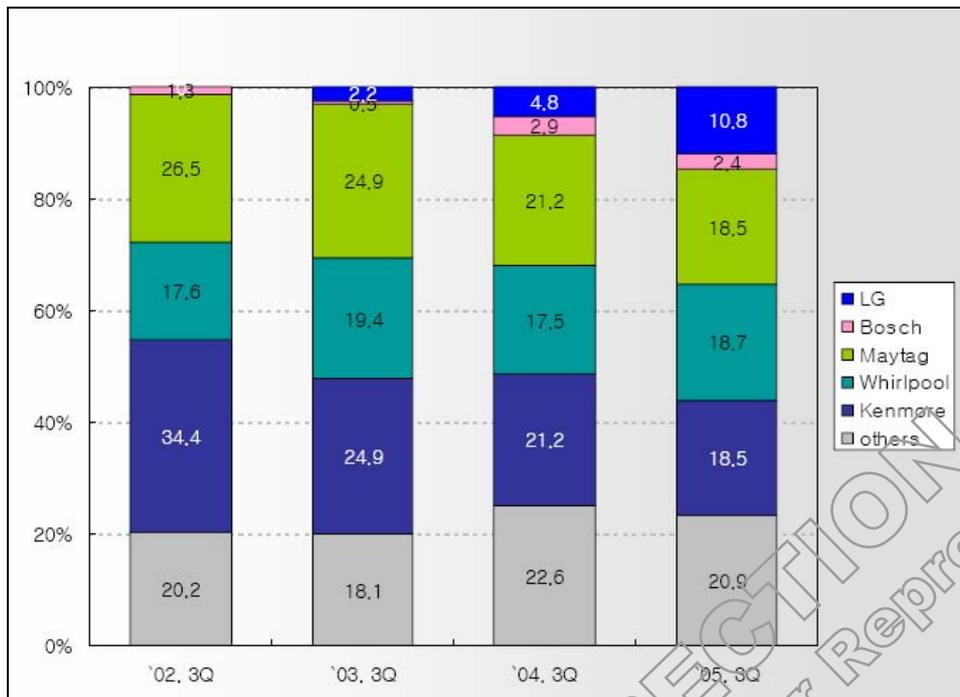
Source: LG Electronics

Exhibit 2
North American Demand for Washing Machines
and Market Share of Five Major Brands, 2002-2005

Volume Demand



Volume Market Share



Source: LG Electronics

Exhibit 3
Distribution Channel Overview

Region	Type	Channel	Store	Characteristics
National	Department Store		867	<ul style="list-style-type: none"> • Brand & Product Oriented • Focus on Kenmore & Kenmore Value • Commissioned Salesmen
	Home Center		744	<ul style="list-style-type: none"> • Price & Brand Oriented • Focus on price and variety of consumer choices • No Salesmen
			1201	<ul style="list-style-type: none"> • Price Oriented • Less variety / Few brands • No Salesmen
	National Specialty		550	<ul style="list-style-type: none"> • Promotion oriented (Flyer & Discount) • #1 in A/V Products (20~23% M/S) • Unskilled Salesmen
Regional	Power Regional		1 ~ 50	<ul style="list-style-type: none"> • Much concern about national channel • Manufacturer's Relationship Oriented • Commissioned Salesmen

Source: LG Electronics

Exhibit 4
Channel Segmentation and Targeting

Channel Type	Channel Member	Target Consumer	Growth (2001-2005)
National Big Box Retailers	Sears	Mid to high	→
	Best Buy	Mid to high Young techy	↑
	Home Center	Low to mid Price conscious	↑
	Warehouse Club	Low to mid Practical Price conscious	→
Regional Chain	PC Richards, Fry's, hhgregg	Mid to high	→
Local Specialty	Local Specialty	Mid to high	→

Source: LG Electronics

Exhibit 5
Retailer Demographics and Consumer Perceptions

Channel	Demographic				Reason of shopping (Proportion of "Yes")									
	AGE	Income			Price	Ad.	Repair	Experience	Recom- mended	Stands Behind product				
	18-34	35-44	45-55	~25K	~30K	50-125K	~250K	250K~						
Regional  M/S 35%	24	49	26	18	22	44	14	3	67.2%	6.4%	4.0%	30.8%	6.4%	10.5%
Home Center  M/S 11%	21	47	31	12	23	50	12	3	70.3%	5.1%	1.1%	23.3%	2.6%	6.1%
Low's  M/S 16%	22	46	31	13	27	49	10	1	68.9%	3.7%	2.2%	24.5%	4.4%	7.0%
Department  M/S 30%	24	44	31	15	23	47	12	3	54.2%	5.9%	9.9%	33.7%	4.1%	19.5%
Specialty  M/S 8%	31	48	19	10	23	51	14	3	73.2%	8.4%	3.4%	27%	2.4%	5.8%

Source: LG Electronics

Exhibit 6
Home Depot and Lowe's Appliance Departments

Home Depot



Lowe's



Source: LG Electronics

Exhibit 7

Strategic Merchandising, Sales Force Training, In-Store Communications, and Coop Advertising and Events at Best Buy

In-Store Communications: End-Cap Displays with Flagship Model

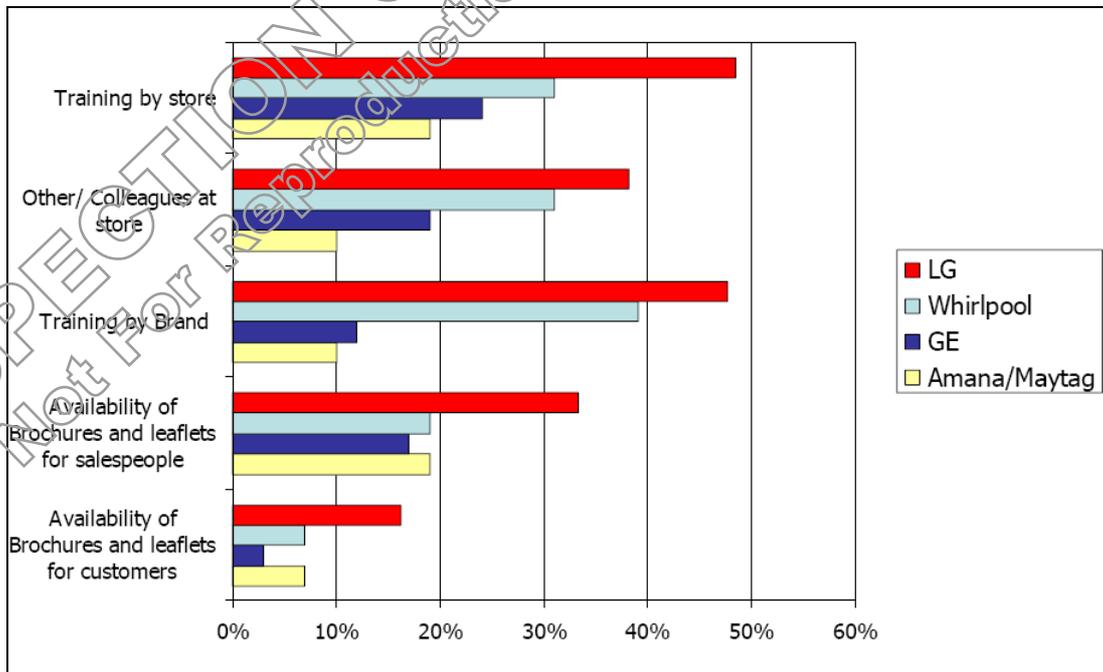


Co-Branded Advertising and Events



Source: LG Electronics

Salesperson Training: Frequent In-Store Training Sessions



Source: LG Electronics

Exhibit 8
Specifications of Directly Competing Models

							
Brand	Whirlpool "Duet"	Samsung	Bosch "Nexxt"	Maytag "Neptune"	Kenmore "HE3T" & "HE4T"		Kitchenaid "Ensemble"
Model	GHW9400PL	WF316LAS	WFMC6400UC	MAH9700AWM	HE3T	HE4T	KHWS02RWH
Capacity	3.8	3.79	3.7	3.81	3.8	3.8	3.7
No. of Cycles	13	12	15	12	7	12	12
Dimensions (in.) WxHxD)	27 x 38 x 31.5	27 x 38 x 30.7	27 x 36.9/10 x 37.6	27 x 38 x 30.75	27 x 38 x 31.5	27 x 38 x 31.5	27 x 38 x 31.5
Energy Star	Yes	Yes	No	Yes	Yes	Yes	Yes
MEF (cu.ft./KWh)	2.17	1.84	2.2	1.84	2.17	2.17	2.17
Noise (dB, SPL)	71.9	73.3	60	73.3	71.9	71.9	72.0
Max Spin Speed (RPM)	1,250	1,100	1,200	1,200	1,050	1,300	1,200
Price (US\$)	\$1,299	\$1,299	\$1,299	\$1,399	\$1,349	\$1,499	\$1,499

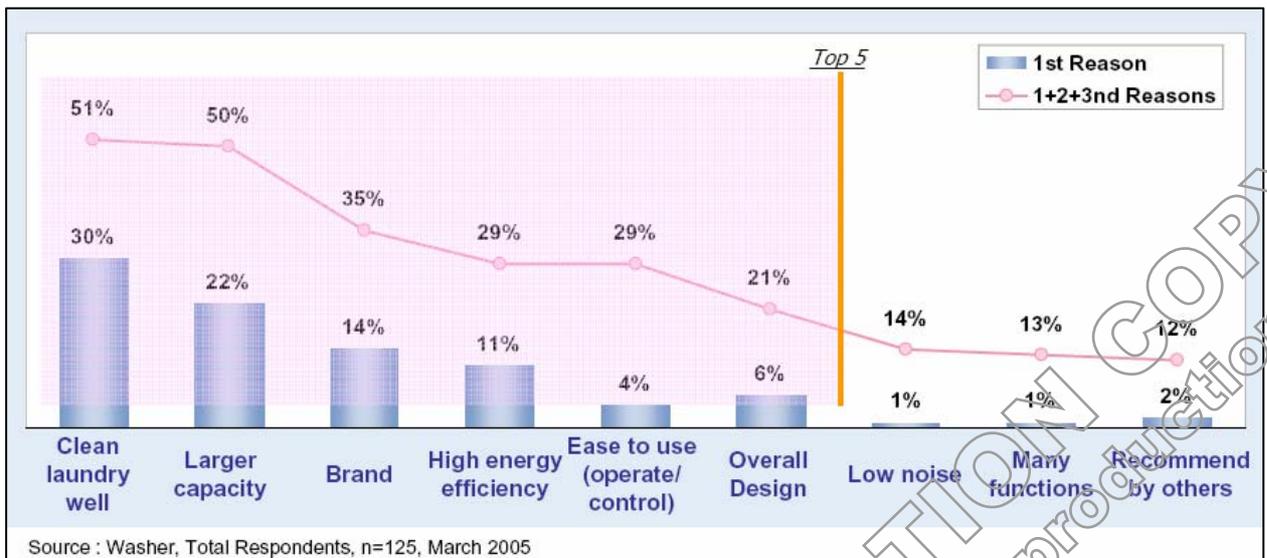
Source: LG Electronics

Exhibit 9
The New Laundry Room



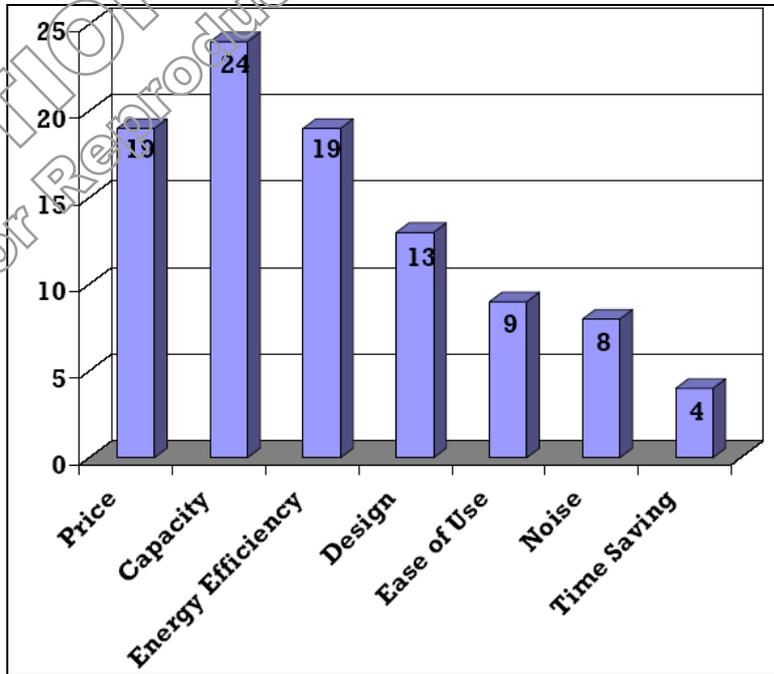
Source: LG Electronics

Exhibit 10
Consumers' Reasons for Choosing Their Currently Owned Washing Machines



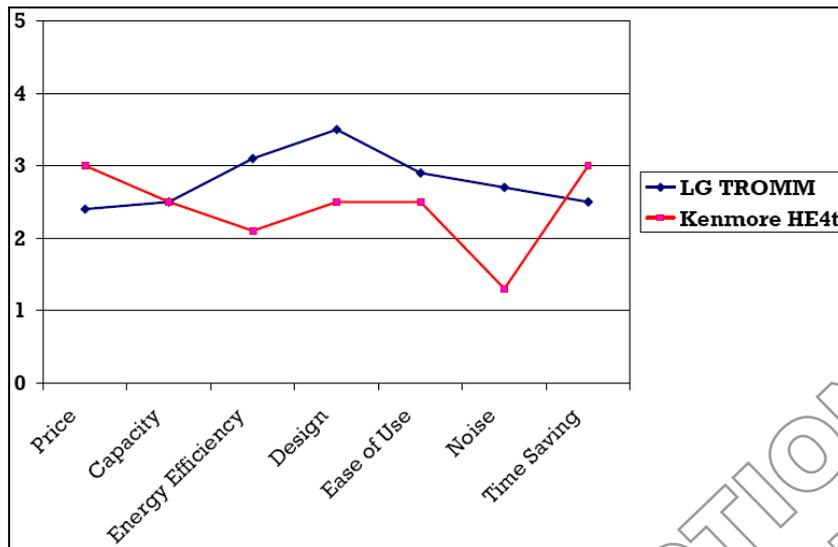
Source: LG Electronics

Exhibit 11
Importance of Different Factors in Purchase Decisions



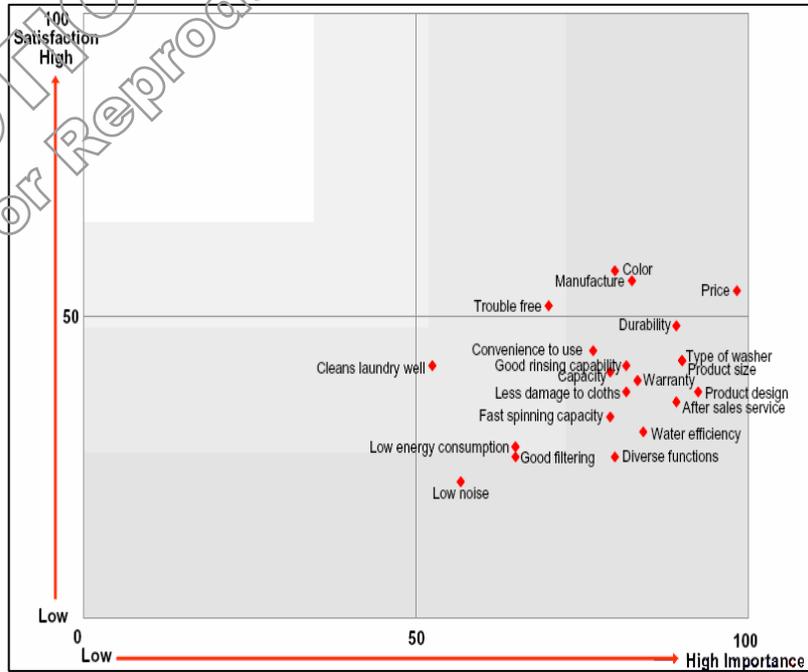
Source: LG Electronics

Exhibit 12
Perceived Performance on Important Purchase Drivers



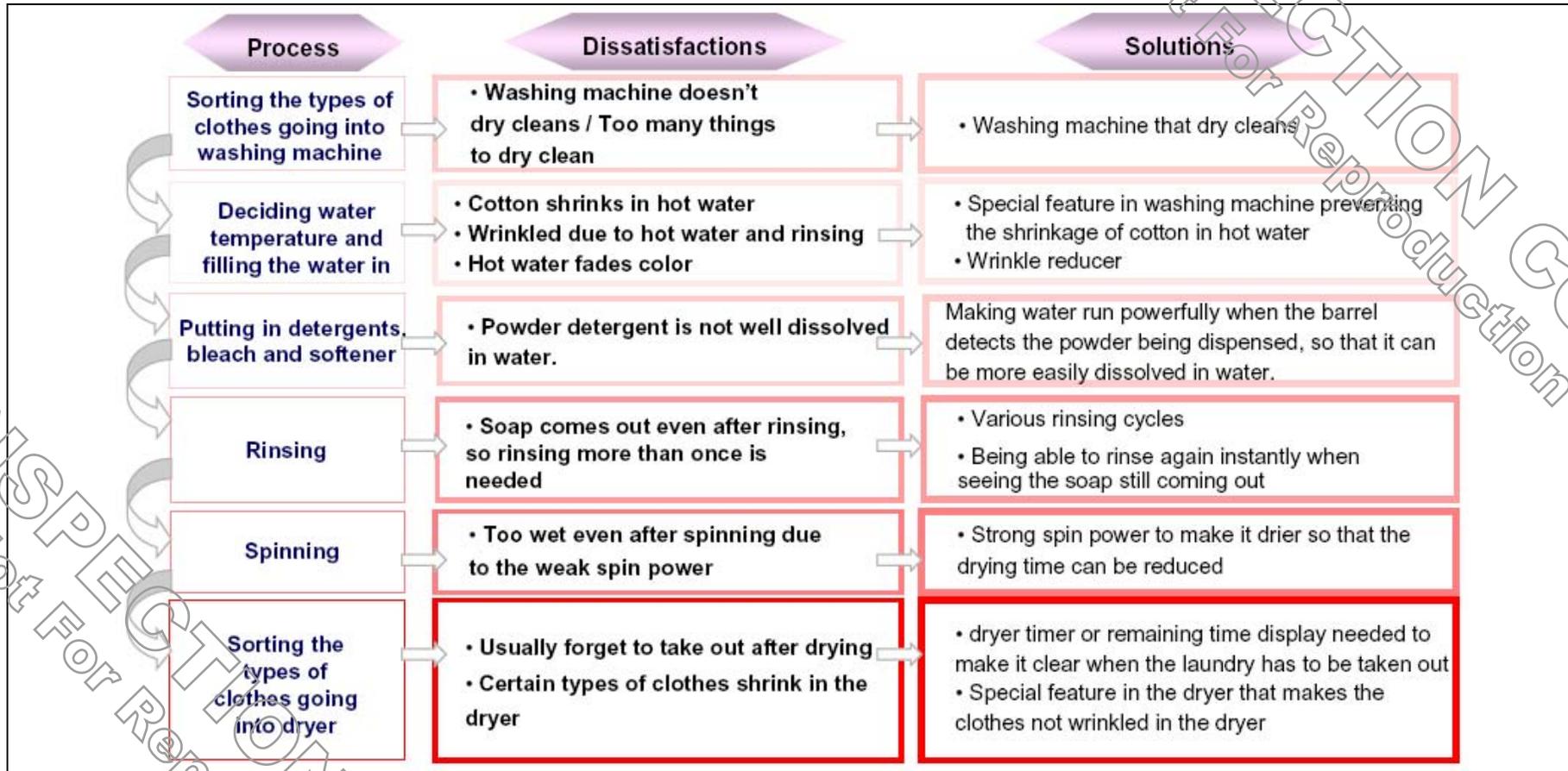
Source: LG Electronics

Exhibit 13
Satisfaction and Importance Map for Characteristics
of Currently Owned Washing Machines



Source: LG Electronics

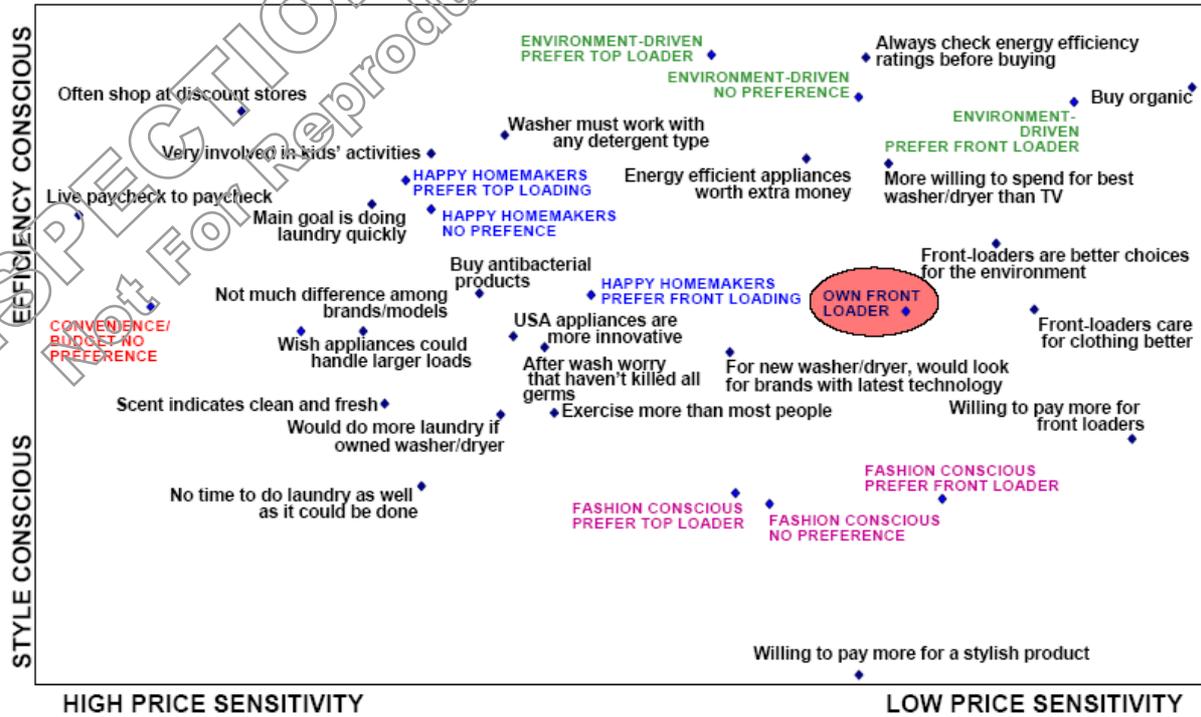
Exhibit 14
Consumers' Dissatisfactions with the Laundry Washing Process



Source: LG Electronics

Exhibit 15

Segments and Segment Preferences



Source: LG Electronics

Exhibit 16
Willingness to Pay by Feature Level

Capacity		Spin Speed (rpm)		Door Material		Added Function	
	Mean (\$)		Mean (\$)		Mean (\$)		Mean (\$)
4.0 cu.ft	1148	1400 rpm	1182	Stainless steel	1154	Drying heater	1202
3.8 cu.ft	1043	1300 rpm	1122			Steam generator	1146
3.7 cu.ft	1000	1200 rpm	1078	Plastic & steel	1000	Water heater	1109
3.5 cu.ft	897	1100 rpm	1038			None (Basic)	1000
3.4 cu.ft	828	1000 rpm	1013				
		900 rpm	1000				
Gap (Max-min)	\$320		\$182		\$154		\$200

Figures indicate how much consumers were willing to pay for a washing machine with a specific feature level, compared to a benchmark washing machine made by a competitor that retailed for \$999 and had the feature configuration indicated by the red box. For example, a washing machine with the same features as the benchmark, but with the lower capacity of 3.5 cu. ft., the consumers' willingness to pay was \$897.

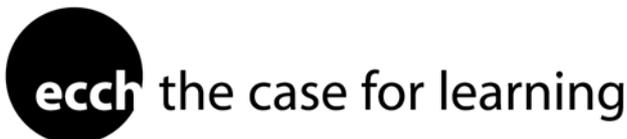
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