Journal of Economics and Public Finance
ISSN 2377-1038 (Print) ISSN 2377-1046 (Online)
Vol. 9, No. 4, 2023
www.scholink.org/ojs/index.php/jepf

Original Paper

The U.S. Disposable Diapers Market: A Competitive Profile

Y. Datta[1*]

[1] Professor Emeritus, Northern KY University, Highland Heights, KY 41099, USA

[*] Y. Datta, Professor Emeritus, Northern KY University, Highland Heights, KY 41099, USA

Received: October 25, 2023 Accepted: November 6, 2023 Online Published: November 13, 2023

doi:10.22158/jepf.v9n4p99 URL: http://dx.doi.org/10.22158/jepf.v9n4p99

Abstract

This is the sixteenth paper that follows the footsteps of fifteen studies that have tried to analyze the competitive profiles of U.S. consumer markets: Men's Shaving Gel, Beer, Shampoo, Shredded/Grated Cheese, Refrigerated Orange Juice, Men's Razor-Blades, Women's Razor-Blades, Toothpaste, Canned Soup, Coffee, Potato Chips, Alkaline AA Battery, Facial Tissue, Toilet Paper, and Paper Towel.

Michael Porter associates high market share with cost leadership strategy, which is based on the idea of competing on a price that is lower than that of the competition.

However, customer-perceived quality—not low cost—should be the underpinning of competitive strategy, because it is far more vital to long-term competitive position and profitability than any other factor. So, a superior alternative is to offer better quality vs. the competition.

In most consumer markets, a business seeking market share leadership should try to serve the middle class by competing in the mid-price segment; and offering quality better than that of the competition: at a price somewhat higher to signify an image of quality, and to ensure that the strategy is both profitable and sustainable in the long run.

The *middle* class is the socio-economic segment that represents about 40% of households in America.

Quality, however, is a complex concept, consumers generally find difficult to understand. So, they often use relative price, and a brand's reputation, as a symbol of quality.

For 2008 the U.S. Disposable Diapers market had sales of $2,411 million.

Using Hierarchical Cluster Analysis, we tested two hypotheses: (I) That the market leader is likely to compete in the mid-price segment, and that (II) Its unit price is likely to be higher than that of the nearest competition.

For both 2008 and 2007, the results did not support Hypothesis I, because both the market leader, Pampers, and the runner-up, Huggies, were member of the super-premium segment.

However, the results did support Hypothesis II for both 2008 and 2007, because Pampers' unit price was higher than that of the runner-up, Huggies.

We found that relative price was a strategic variable, as hypothesized.

A pattern is emerging in price-quality segmentation analysis. In ten of the sixteen studies—that exclude Men's and Women's Razor-Blades, Ground Coffee, Toilet Paper, Paper Towels, and Disposable Diapers—the market leader was found to be a member of the mid-price segment, as we have hypothesized.

Moreover, results in seven markets supported Hypothesis II.

Finally, we also discovered three strategic groups in the industry.

Keywords

U.S. Disposable Diapers market, market segmentation, cost leadership strategy, price-quality segmentation, market-share leadership, relative price a strategic variable, strategic groups.

1. Introduction

This is the *sixteenth* paper that follows the footsteps of *fifteen* studies that have tried to analyze the competitive profiles of U.S. consumer markets*:* Men's Shaving Gel, Beer, Shampoo, Shredded/Grated Cheese, Refrigerated Orange Juice, Men's Razor-Blades, Women's Razor-Blades, Toothpaste, Canned Soup, Coffee, Potato Chips, Alkaline AA Battery, Facial Tissue, Toilet Paper, and Paper Towel (Datta, 2012, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c, 2020d, 2021, 2023a, 2023b, 2023c).

This research relies on a broader, *integrated* framework of market segmentation which includes *both* the demand *and* supply sides of the competitive equation. This approach is based on the idea that, *starting* with *'product'* characteristics is both an *easier* and more *actionable* way of segmenting markets, than the traditional marketing approach that typically begins with the customer or *'people'* characteristics (Datta, 1996).

This research is based on the notion that the path to market share leadership does not lie in lower price founded in *cost leadership* strategy, as Michael Porter (1980) suggests. Rather, it is based on the premise—according to the PIMS (Note 1) database research—that it is *customer*-perceived quality that is crucial to long-term competitive position and profitability. So, the answer to market share leadership for a business is to *differentiate* itself by offering quality *better* than that of the nearest competition (Datta, 2010a, 2010b).

To make this idea *operational* requires *two* steps. The *first* is to determine *which* price-quality segment to compete in? Most consumer markets can be divided in *three basic* price-quality segments: *premium*, *mid-price*, and *economy*. These can be extended to *five* by adding two more: *ultra-premium* and *ultra-economy* (Datta, 1996).

The answer lies in serving the *middle* class by competing in the *mid-price* segment. This is the socio-economic segment that represents about 40% of households in America (Datta, 2011). It is also the segment that Procter & Gamble (P&G), a leading global consumer products company, has successfully served in the past (Datta, 2010b).

2. The Strategic Importance of Price Positioning

The *second* step for a business seeking market share leadership is to position itself at a price that is *somewhat* higher than that of the nearest competition. This is in accord with P&G's practice based on the idea that although higher quality does deserve a "price premium," it should *not* be excessive (Datta, 2010b). A higher price offers two advantages: (1) It promotes an image of quality, and (2) It ensures that the strategy is both profitable *and* sustainable in the long run (*ibid*).

As mentioned above, the *middle* class constitutes about 40% of households in America. So, in a *competitive* market one would normally expect more than one major brand competing in the *mid-price* segment.

A classic example of price positioning is provided by General Motors (GM). In 1921 GM rationalized its product line by offering "a car for every purse and purpose"—from Chevrolet to Pontiac, to Oldsmobile, to Buick, to Cadillac. More importantly, GM positioned each car line at the *top* of its segment (Datta, 1996, 2010a).

A more recent and familiar example is the *economy* chain, Motel 6, which has positioned itself as "offering the *lowes*t price of any national chain". Another example is the Fairfield Inn. When Marriott introduced this chain, it targeted it at the *economy* segment. And then it positioned Fairfield at the *top* of that segment (Datta, 1996).

2.1 Close Link between Quality and Price

As mentioned above, *customer*-perceived quality is the most important factor contributing to the long-term success of a business. However, quality cannot really be separated from price (Datta, 1996). Quality, in general, is an intricate, multi-dimensional concept that is difficult to comprehend. So, consumers often use *relative* price—and a brand's *reputation*—as a symbol of quality (Datta, 1996, 2010b).

3. A Short History of the U.S. Disposable Diapers Industry

Disposable Diapers were developed simultaneously in Europe *and* North America between the 1930s and 1950s, with most progress taking place *after* World War II. Technological advances, such as the development of more *soft* and *absorbent* materials drove the disposable market to new highs (Note 2).

4. P&G Introduces Pampers Disposable Baby Diapers in 1961

In 1956, a Procter and Gamble (P&G) researcher, Victor Mills, did *not* like changing the *cloth* diapers of his newborn grandchild. So, he asked fellow researchers in P&G's Exploratory Division in Miami Valley, Ohio to explore the practicality of making a better *disposable* diaper (Note 3).

The Pampers disposable diapers were created by P&G researchers Vic Mills and Norma Lueders Baker (Note 4).

As a result of this background, P&G was able to introduce Pampers disposable baby diapers in 1961 (Note 3).

5. P&G Pampers Created New Customers and Served them Better than the Competition

Throughout the 1960s and the 1970s, Pampers built significant unit volume and dollar sales by converting *cloth*-diaper users to *disposable*-diaper users. Thus, P&G effectively *created* a new product category, and easily became the market *leader* (Lafley, 2013).

The P&G story is a great example of strategic *insight* and *vision:* a *better* product that fulfilled an *unmet* consumer need; delivered a *better* user *experience*; and created *better* consumer *value* (*ibid*).

In the words of Peter Drucker, Pampers disposable baby diapers "*created* customers" and served them *better* than the competition (Lafley, 2013, *italics* added).

By the mid-1970s, Pampers had garnered a 75% market share in America, and was being sold in 75% countries around the world (*ibid*).

6. P&G Introduces Luvs Brand Disposable Diapers in 1976 that were Better than Pampers

In 1976 P&G launched a *second* disposable diapers brand, Luvs, which featured an *hourglass*-shaped pad with elastic gathers. Luvs provided a superior *fit, absorbency*, and *comfort* for a 30% price *premium* compared to Pampers (Lafley, 2013).

Luvs soon became an industry *standard* (Note 4).

7. Launching Luvs as a Second Diaper Brand Most Strategic Error in P&G History

In a blog, A.G. Lafley, formerly the Charman and CEO of P&G, made an *amazing* statement. He said that introducing Luvs as a *second* diaper brand was the *most* strategic *mistake* in P&G history! (Lafley, 2013).

He asks: Why did P&G decide to introduce a *new* higher quality brand—Luvs--rather than improving and extending the *existing mega* brand: Pampers? (Lafley, 2013).

At that time, P&G's practice was a *multibrand* strategy: a new *brand* for every new product, a strategy that seemed to be working well in laundry detergents and other products (*ibid*).

Second, the new diaper design entailed *higher* operating costs, because it needed significant investment in manufacturing, that would then require a 20% hike in Pampers' retail price. So, P&G worried that the existing Pampers users would *reject* a premium line of Pampers (*ibid*).

However, consumers *liked* Luvs because of its clearly *better* quality, and offered good *value* that justified its premium price (*ibid*).

As mentioned above, soon Luvs became an industry *standard* (Note 4).

But, as it turned out, introduction of Luvs did *little* to bring new customers to P&G; instead, it split the market share between Luvs and Pampers (Lafley, 2013).

8. Huggies Disposable Diapers

In 1978 Kimbrly-Clark introduced (Kleenex) Huggies, a new brand of disposable diapers (Note 5).

Huggies had a Luvs-like *hourglass* shape, a *better* fit, and an *improved* tape-fastening system (Lafley, 2013). As a result, the market share of Huggies climbed to 30% (Lafley, 2013).

Later, P&G learnt based on a series *focus*-group research that every single *mom* that used Huggies, Luvs, or Pampers preferred the *hourglass*-shaped diaper (*ibid*).

So, in 1990s P&G *repositioned* Luvs as a brand with a price *lower* than that of Pampers (*ibid*).

In 2008, Luvs was competing in the *premium* segment with a brand market share of 6.4%. However, Pampers was the market *leader* with a 30.9% share, and a membership in the *super-premium* segment (Table 1).

9. Private Brands

Another *major* player in the Disposable Diapers market in 2008 was the Private Brands. It is important to clarify what *private* brands are. These are brands made exclusively for individual *retailers*, e.g., a supermarket, or a drug store. Usually, such brands are targeted at the *economy* segment, and, as such, are generally sold at prices *lower* than those of major *mid-price* brands. One reason retailers *like* private brands, is because private brands tend to be more *profitable* than leading name brands (Datta, 2018b, 2018c, 2020b, 2020c, 2021, 2023a, 2023b, 2023c).

Nevertheless, in 2008 Private Brands were a member of the *mid-price* segment with a *collective* brand market share of 14.4% in the Disposable Diapers market (Table 1).

10. The U.S. Disposable Diapers Market—Price-Quality Segmentation Profile

This study is based on U.S. retail sales for the U.S. Disposable Diapers Market for 2008 and 2007 (Note 6). The data includes total dollar and unit sales, no-promotion dollar and unit sales, and promotion dollar and unit sales (Note 7).

For 2008 the total U.S. retail sales of Disposable Diapers were $2,411 million (Table 1). The pack sizes varied from small to extra-large, with the large size (size 4) being by far the *most* popular: with a 30% share, and with sales of $713 million (Table 1).

So, we have focused cluster analysis on this size.

10.1 Hierarchical Clustering as the Primary Instrument of Statistical Analysis

We have used cluster analysis as the *primary* statistical tool in this study. As suggested by Ketchen and Shook (1996), we have taken several steps to make this effort as *objective* as possible:

- First, this study is *not* ad-hoc, but is grounded in a *theoretical* framework, as laid out below.
- Second, we are fortunate that we were able to get *national* U.S. sales data for our study for *two* years.
- Thus, this data provided a *robust* vehicle for subjecting cluster consistency and reliability to an *additional* test.
- Third, we wanted to use two different techniques—KMeans and Hierarchical—to add another layer of cluster consistency and reliability. However, we found Hierarchical cluster

analysis to be *superior* in meeting that test. So, we did *not* consider it necessary to use the KMeans technique.

10.2 Theoretical Foundation for Determining Number of Clusters—and Their Meaning

As already stated, a major purpose of this paper is to identify the market share *leader* and determine the price-quality segment—based on unit *price*—it was competing in.

An important question in performing cluster analysis is to figure out the *number* of clusters based on an *a priori* theory. Most consumer markets can be divided in three *basic* price-quality segments: *premium*, *mid-price*, and *economy*. These three basic segments can be extended to *five*: with the addition of *super-premium* and *ultra-economy* segments (Datta, 1996).

Therefore, *three* represents the *minimum* and *five* the *maximum* number of clusters (Datta, 2012, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c, 2020d, 2021, 2023a, 2023b, 2023c).

An equally crucial issue is to find out what each cluster (e.g., *economy*, *mid-price*, *and premium*) really *means*.

Perhaps a good way to understand what each price-quality segment stands for in *real* life is to look at a socio-economic *lifestyle* profile of America. It reveals *six* classes (Note 8). Each class is associated with a price-quality segment typified by the retail stores where they generally shop: each a symbol of their *lifestyle* (Datta, 2011).

10.3 Guidelines for Cluster Consistency and Reliability

In addition to laying a theoretical foundation for the *number* of clusters, we set up the following guidelines to *enhance* cluster consistency and reliability (Datta, 2012, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c, 2020d, 2021, 2023a, 2023b, 2023c):

- In general, there should be a *clean break* between *contiguous* clusters.
- The *anchor* clusters—the top and the bottom—should be *robust*. In a cluster-analysis project limited to a range of three to five clusters, a robust cluster is one whose membership remains constant from three- to four-, *or* four- to five-cluster solutions.
- Finally, we followed a step-by-step procedure to determine the optimal solution. First, we start with *three* clusters. Thus, the bottom cluster obviously becomes the *economy* segment and the top cluster the *premium* segment. Next, we go to *four* clusters, and *tentatively* call them: *economy*, *mid-price*, *premium*, and *super-premium*. Then we go to *five* clusters. If the membership of the *bottom* cluster remains unchanged from what it was in the four-cluster result, it clearly implies that the *ultra-economy* segment does *not* exist. Then, if the membership of the *top* cluster also remains the same from a four- to a five-cluster solution, then the *top* cluster becomes the *super-premium* segment. This signifies that even in a five-cluster solution we have only *four* price-quality segments: *economy*, *mid-price*, *premium*, and *super-premium*.
- It means that either the *premium* or the *mid-price* segment consists of *two sub*-segments.

10.4 External Evidence to Validate Results of Cluster Analysis

Whenever possible, we have tried to seek *external* evidence to validate the results of cluster analysis. For example, many companies identify on their websites a certain brand(s) as a *premium* or luxury brand. A case in point is that of P&G which says that its plan is to compete in all "price points": *super-premium*, *premium*, and *mid-price: except* the *economy* segment (Datta, 2010b).

11. Testing Hypotheses

- I—That the market-share leader would be a member of the *mid-price* segment.
- II—That the market-share leader would carry a price tag that is *higher* than that of the nearest competition.

12. Results of Hierarchical Cluster Analysis

In Table 1 we present the cluster analysis results for 2008 that involved 24 brands.

For both 2008 and 2007, the results did *not* support Hypothesis I. This is because *both* Pampers, the *market leader*, and Huggies, the *runner-up*, were found to be members of the *super-premium* segment.

However, the data supported Hypothesis II, because the unit price of the market leader, Pampers was *higher* than that of the runner-up, Huggies.

13. Why the Cluster Analysis Results Did Not Support Hypothesis I?

Toilet activity is quite *complex*, in which personal *hygiene* plays a critical role. Although a *bidet* is quite popular in Europe, very few people in America use it.

Thus, in the absence of a substitute, Americans are willing to pay *premium* prices for *toilet paper*, because it serves an *important* need: an *antidote* to germs and disease (Datta, 2023b).

Similarly, Americans do *not* mind paying premium prices for disposable diapers as well. In the words of Peter Drucker, Pampers disposable baby diapers "*created* customers" and served them *better* than the competition.

Another reason, according to P&G, is the rising cost of *pulp*--a raw material used to make disposable diapers--and higher transportation and freight costs (Note 9).

14. Relative Price a Strategic Variable

Finally, we performed one more test to determine the consistency and reliability of the results of cluster analysis in this study. So, we *ranked* the unit price of each brand for 2008 and 2007 for the large (size 4) Disposable Diapers. All *three* measures of *bivariate* correlation—Pearson, and non-parametric measures Kendall's tau_b, and Spearman's rho—were found to be *significant* at an amazing 0.01 level!

We believe these surprising results became possible only, because managements in the Disposable Diapers industry must have been treating *relative* price as a strategic variable, as we have hypothesized.

15. The Role of Promotion

For 2008 the promotional sales of Disposable Diapers averaged 34.8% of total retail sales (Table 2). We performed *bivariate* correlation between total retail sales vs. promotional (PROMO) sales. The results were significant for *all* three measures—Pearson, Kendall, and Spearman—at an amazing 0.01 level.

Table 2 presents a measure of the promotional *intensity* for 2008.

In general, one would expect that higher a brand's sales, higher its promotional intensity, as exemplified by Pampers and Huggies. However, we also see another pattern: in which several brands with *low* market-shares had promotional intensity that was very *high*.

16. A Pattern Emerging in Price-Quality Segmentation Analysis

This is the *sixteenth s*tudy that encompasses analysis of competitive profiles of U.S. consumer markets. In each study we have tested two hypotheses:

- I—That the market leader would be a member of the *mid-price* segment.
- II—That the market leader would carry a price tag that is *higher* than that of the nearest competition.

17. Men's and Women's Razor-Blade Markets Did Not Support Hypothesis I

In the Men's Razor-Blade market for 2008, the *market leader* was Gillett Mach 3 in the *premium* segment, and Gillette Fusion, the *runner-up,* was in the *super-premium* segment (Datta, 2019a)

In the Women's Razor-Blade market for 2008, the market leader Gillett Venus, the *market leader*, and Schick Intuition Plus, the *runner-up*, were *both* members of the *premium* segment (Datta, 2019b).

So, what are the factors that these two markets have deviated from our theory? (Datta, 2019a, 2019b):

- The technology for making Men's and Women's Razors and Blades has now become quite *intricate*, based as it is on *three* fields: metallurgy, chemistry, and electronics, which, in turn, raises the *cost* of production,
- Gillette has been pursuing a strategy of *innovation* and constant improvement, offering new features—and benefits—than ever before, which has consequently made it possible for it to charge *premium* prices.
- Gillette's virtual *monopoly* of the industry is another factor, that has enabled it to position itself in the *premium* and *super-premium* segments: rather than the *mid-price* segment.
- Many men—and women--consider shaving an important part of *personal grooming*, for which they are willing to pay *premium* prices: because they regard it an "affordable luxury."

18. The Toilet Paper, Paper Towel, and Disposable Diaper Markets Also Did Not Support Hypothesis

The results in the Toilet Paper study also did not support Hypothesis I, because *both* Charmin, the market leader, and Cottonelle, the runner-up, were members of the *premium* segment (Datta, 2023b).

As mentioned earlier, toilet activity is quite complex, in which personal *hygiene* plays a critical role. Although a *bidet* is quite popular in Europe, very few people in America use it.

So, in the absence of a substitute, Americans are willing to pay *premium* prices for *toilet paper*, because it serves an *important* need: an *antidote* to germs and disease (*ibid*).

Similarly, Americans do *not* mind paying premium prices for disposable diapers as well.

In the words of Peter Drucker, Pampers disposable baby diapers "*created* customers" and served them *better* than the competition.

Another reason, according to P&G, is the rising cost of *pulp*--a raw material used to make disposable diapers--and higher transportation and freight costs (Note 9).

In the Paper Towel market, the *market leader*, Bounty, was a member of the *super-premium* segment. In fifteen studies discussed here, *not* a single market leader was able to claim an association with the *super-premium* segment (*ibid*)!

So, *what* made this extraordinary result possible?

As stated before, P&G *revolutionized* the industry with a 2-ply paper towel, Bounty, that was not only *soft* and *strong,* but was *unmatched* in being *quick* and *absorbent* on spills.

Whereas most paper towel makers were marketing *strength* or *softness*, P&G discovered that consumers generally *preferred* something else: *absorbency:* for which 39% of American customers paid *super-premium* prices for Bounty paper towel in 2008 (Datta, 2023c).

And that is why P&G uses the slogan "*The Quicker Picker Upper*" in its advertisements for Bounty (*ibid*).

19. Results in Ten Markets Support Hypothesis I

In *ten* of the sixteen studies—that *exclude* Men's and Women's Razor-Blades, Ground Coffee, Toilet Paper, Paper Towel, and Disposable Diapers—the market leader was found to be a member of the *mid-price* segment, as we have hypothesized. Those market leaders are:

(1) Edge Men's Shaving Gel, (2) Bud Light Lager Beer, (3) Pantene Shampoo, (4) Kraft Grated/Shredded Cheese, (5) Tropicana Refrigerated Orange Juice, (6) Crest Toothpaste, (7) Campbell Chicken Broth, and Campbell Chicken Noodle Soup, (8) Lay's Potato Chips, (9) Energizer Alkaline AA Battery, and (10) Facial Tissue.

One important exception to these results is the *Ground Coffee* market. The *market leader,* Folgers, and the *runner-up* Maxwell House, were *both* members of the *economy* segment, although Folgers' unit price was *higher* than that of Maxwell House, as we have hypothesized (Datta, 2020c).

This is truly an *astonishing* result! In the ten studies mentioned above, *not* a single market leader—or even the runner-up—competed in the *economy* segment.

This implies that both Folgers and Maxwell House were following the *cost leadership* strategy based on *lower* price, rather than better quality, and treated coffee as a *commodity* to gain market share. So, it is not unreasonable to conjecture that such a strategy is not likely to have been very profitable (Datta, 2020c).

20. Results in Seven Markets Support Hypothesis II

In *three* of the ten markets mentioned above, the results did *no*t support Hypothesis II.

In the Chicken Noodle Soup market, the *runner-up*, Progresso, was a member of the *premium* segment. Similarly, in the Facial Tissue market, the *runner-up*, Puffs, was a member of the *premium* segment. But this was because of Puffs' demonstrably *higher* quality (Datta, 2023a).

In the Shampoo market, the *runner-up*, Head & Shoulders was a member of the *mid-price* segment. Yet, its price was *higher* than that of the *market leader*, Pantene. However, this result did *not* negate Hypothesis II, because it was due to the fact that the former was a *specialty* shampoo, which always sells at a *higher* price.

Nevertheless, in these *seven* markets the *runner-up* brands, like the market leaders, were members of the *mid-price* segment: with a price tag that was *lower* than that of the market leaders.

21. Strategic Groups in the U.S. Disposable Diapers Market, 2008

We found *three* strategic groups in this market. Their 2008 *brand* market shares are as follows:

1. Procter & Gamble—*Market Leader*
    - Pampers—30.9%
    - Luvs—6.4%
2. Kimberly Clark—*Runner-Up*
    - Huggies—27.1%
    - Pull-Ups—10.3%
3. Private Brands—14.4%

21.1 Procter & Gamble (P&G) Corporation

P&G is an American corporation that is one of the world's *leading* consumer product companies.

For 2022 P&G has reported net sales of $80.2 Billion (Note 10).

21.2 Kimberly Clark Corporation

Kimberly Clark is an American multinational corporation that produces mostly personal-care *paper-based* consumer products: among others, facial tissue, feminine hygiene products, toilet tissues, and disposable diapers (Note 11).

In 2022 it celebrated its 150th anniversary (Note 12).

22. Conclusion

The path to market share leadership does *not* lie in *cost leadership* strategy: a path that is grounded in a *price that is lower* than that of the competition, as Michael Porter has suggested. Rather, a business in pursuit of market-share leadership should try to serve the *middle* class by competing in the *mid-price* segment; and offering quality *superior* to that of the competition: at a somewhat *higher* price to connote an image of quality, *and* to ensure that the strategy is both profitable and sustainable in the long run.

The *middle* class is the socio-economic segment that represents about 40% of households in America. Quality, however, is a complex concept that consumers generally find difficult to understand. So, they often employ *relative* price and a brand's *reputation* as a symbol of quality.

For 2008 the total U.S. retail sales of the Disposable Diapers market were $2,411 million (Table 1). By far the *most* popular size was the large size (size 4), which constituted 29.6% of total sales. So, we have focused cluster analysis on this size.

We tested two hypotheses. (I) That the market-share leader, would be a member of the *mid-price* segment, and (II) That the market-share leader would carry a price tag that is *higher* than that of the nearest competition.

For *both* 2008 and 2007, the results did *not* support Hypothesis I. This is because both the market leader, Pampers, and the runner-up, Huggies, were members of the *super-premium* segment.

Nevertheless, the data did support Hypothesis II, because the unit price of Pampers was *higher* than that of Huggies.

We also found that *relative* price was a strategic variable, as we have hypothesized.

A *pattern* is emerging in price-quality segmentation analysis. In *ten* of the sixteen studies—that exclude Men's and Women's Razor-Blades, Ground Coffee, Toilet Paper, Paper Towel, and Disposable Diapers—the results *supported* Hypothesis I: that the *market leader* was going to be to be a member of the *mid-price* segment.

Also, results in *seven* markets supported Hypothesis II: that the *runner-up* was also going to be a member of the *mid-price* segment, and that its price was going to be *lower* than that of the market leader.

Finally, we discovered *three* strategic groups in the industry.

Table 1. Hierarchical Cluster Analysis: The U.S. Disposable Diapers Market, 2008

PQ Segment	Disposable Diapers Brands: Large (24)	Upr.	Clus.Ctr.	Mksh% LargeSize	Sales$M LargeSize	Mksh% Brand	$M Sales Brand
Super-premium	**PAMPERS SIZE 4 (market leader)**	**$16.71**	$16.05	**28.0%**	**$199.63**	**30.9%**	**$746.1**
	HUGGIES LARGE (runner-up)	**$15.38**		**25.4%**	**$181.37**	**27.1%**	**$653.4**
Premium	G DIAPERS MEDIUM/LARGE	$13.88	$12.98	0.0%	$0.18	0.0%	$0.2
	GOODNITES LARGE/EXTRA LARGE	$13.36		7.8%	$55.60	5.1%	$123.4
	LUVS SIZE 4	$12.79		6.5%	$46.00	6.4%	$153.6
	PAMPERS STAGES EASY UPS SIZE 4	$12.52		3.6%	$25.43	2.7%	$65.8
	PULL-UPS 3T-4T	$12.35		14.7%	$104.92	10.3%	$248.2
Mid-price	PAMPERS STAGES FEEL'N LEARN 4T-5T	$10.63	$8.87	0.4%	$2.79	0.5%	$11.6
	TENDER CARE PLUS LARGE	$9.95		0.0%	$0.09	0.0%	$0.2
	NATURE BABY CARE LARGE	$9.83		0.0%	$0.29	0.0%	$0.9
	NATURAL CHOICE LARGE	$9.28		0.0%	$0.10	0.0%	$0.3
	PRIVATE BRANDS LARGE	**$9.13**		**11.7%**	**$83.54**	**14.4%**	**$346.7**
	PAMPERS SPLASHERS SIZE 3-4	$8.81		0.6%	$3.98	0.3%	$7.1
	SNUGGEMS 3T-4T	$8.79		0.0%	$0.05	0.0%	$0.1
	PREMIER VALUE LITTLE DARLINGS 4T-5T	$8.41		0.0%	$0.05	0.0%	$0.2
	'HUGGIES LITTLE SWIMMERS LARGE	$8.33		1.0%	$6.97	1.2%	$28.0
	SLEEPWELL LARGE	$7.86		0.0%	$0.24	0.0%	$0.8
	CHICOLASTIC CHICOLOR LARGE	$7.85		0.1%	$0.81	0.1%	$2.2
	TODAY'S FAMILY LARGE	$7.61		0.0%	$0.26	0.1%	$1.3
Economy	PURE'N GENTLE LARGE	$7.15	$6.65	0.0%	$0.10	0.0%	$0.6
	FITTI LARGE	$6.63		0.0%	$0.27	0.0%	$0.8
	PRECIOUS LARGE	$6.17		0.0%	$0.20	0.0%	$0.6
Ultra-Econmoy	ARQUEST INC-NBL LARGE	$4.72	$4.08	0.0%	$0.06	0.0%	$0.1
	HAPPY BABY LARGE	$3.44		0.0%	$0.06	0.0%	$0.1
				100.0%	$712.98	**99.2%**	**$2,392.4**
Grand Total					**29.6%**	**100.0%**	**$2,410.9**

Table 2. Percentage of Promotional Sales to Total Sales: U.S. Disposable Diapers Market, 2008

Brands with 2008 Sales over $1 Million

Disposable-Diaper Brands	**PQ Segment**	**Promo %**	**Promo Intensity**	**Brand Mksh%**
PAMPERS SPLASHERS	Mid-price	64.0%	**Very Heavy**	0.6%
HUGGIES LITTLE SWIMMERS	Mid-price	46.0%	**Heavy**	1.0%
PAMPERS STAGES FEEL'N LEARN	Mid-price	45.5%		0.4%
PAMPERS (market leader)	**Super-premium**	**41.1%**		**28.0%**
HUGGIES (runner-up)	**Super-premium**	**36.0%**	**Moderate**	**25.4%**
PULL-UPS	Premium	30.8%		14.7%
PRIVATE BRANDS	Mid-price	30.5%		11.7%
PAMPERS STAGES EASY UPS	Premium	30.1%		3.6%
LUVS	Premium	27.4%		6.5%
TODAY'S FAMILY	Mid-price	26.2%		0.0%
CHICOLASTIC CHICOLOR	Mid-price	22.4%	**Low**	0.1%
GOODNITES	Premium	19.0%		7.8%
Average Promo%		**34.8%**		

Acknowledgement

We are *immensely* grateful to A.C. Nielson Co. for their extraordinary generosity for the invaluable U.S. national retail sales data of the U.S. Disposable Diapers market for 2008 and 2007, without which this project would *not* have been possible.

References

Datta, Y. (1996). Market segmentation: An integrated framework. *Long Range Planning*, *29*(6), 797-811. https://doi.org/10.1016/S0024-6301(97)82817-8

Datta, Y. (2010a). A critique of Porter's cost leadership and differentiation strategies. *Chinese Business Review*, *9*(4), 37-51.

Datta, Y. (2010b). Strategic group theory: A customer-oriented view. *Chinese Business Review*, *9*(7), 11-26, 36.

Datta, Y. (2011). Rising economic inequality and class divisions in America: A socio-economic class lifestyle profile. *Oxford Journal*, *11*(1), 1-25.

Datta, Y. (2012). The U.S. men's shaving cream market: A competitive profile. *Chinese Business Review*, *11*(1), 44-64. https://doi.org/10.17265/1537-1506/2012.01.003

Datta, Y. (2017). The U.S. Beer market: A competitive profile. *Journal of Economics and Public Finance*, *3*(4), 541-579. https://doi.org/10.22158/jepf.v3n4p541

Datta, Y. (2018a). The U.S. Shampoo Market: A competitive profile. *Journal of Economics and Public Finance*, *4*(2), 180-207. https://doi.org/10.22158/jepf.v4n2p180

Datta, Y. (2018b). The U.S. Shredded/Grated Cheese market: A competitive profile. *China-USA Business Review*, *17*(8), 385-401. https://doi.org/10.17265/1537-1514/2018.08.001

Datta, Y. (2018c). The U.S. Refrigerated Orange Juice market: A competitive profile. *Journal of Economics and Public Finance*, *4*(4), 389-409. https://doi.org/10.22158/jepf.v4n4p389

Datta, Y. (2019a). The U.S. Men's Razor-Blade market: A competitive profile. *Journal of Economics and Public Finance*, *5*(3), 354-374. https://doi.org/10.22158/jepf.v5n3p354

Datta, Y. (2019b). The U.S. Women's Razor-Blade market: A competitive profile. *Journal of Economics and Public Finance*, *5*(4), 491-508. https://doi.org/10.22158/jepf.v5n4p491

Datta, Y. (2020a). The U.S. Toothpaste market: A competitive profile. *Journal of Economics and Public Finance*, *6*(1), 145-167. https://doi.org/10.22158/jepf.v6n1p145

Datta, Y. (2020b). The U.S. Canned Soup market: A competitive profile. *Journal of Economics and Public Finance*, *6*(2), 153-172. https://doi.org/10.22158/jepf.v6n2p153

Datta, Y. (2020c). The U.S. Coffee Market: A competitive profile. *Journal of Economics and Public Finance*, *6*(3), 138-171. https://doi.org/10.22158/jepf.v6n3p138

Datta, Y. (2020d). The U.S. Potato Chip Market: A Competitive Profile. *Journal of Economics and Public Finance*, *6*(4), 86-107. https://doi.org/10.22158/jepf.v6n4p86

Datta, Y. (2021). The U.S. Alkaline Battery Market: A Competitive Profile. *Journal of Economics and Public Finance*, 7(2), 35-46. https://doi.org/10.22158/jepf.v7n2p35

Datta, Y. (2023a). The U.S. Facial Tissue Market: A Competitive Profile. *Journal of Economics and Public Finance*, 9(3), 92-105. https://doi.org/10.22158/jepf.v9n3p92

Datta, Y. (2023b). The U.S. Toilet Paper Market: A Competitive Profile. *Journal of Economics and Public Finance*, *9*(3), 140-156. https://doi.org/10.22158/jepf.v9n3p140

Datta, Y. (2023c). The U.S. Paper Towel Market: A Competitive Profile. *Journal of Economics and Public Finance*, *9*(4), 1-16. https://doi.org/10.22158/jepf.v9n4p1

Ketchen, Jr., D. J., & Shook, C. L. (1996). The application of cluster analysis in strategic management research: An analysis and critique. *Strategic Management Journal*, *17*, 441-458. https://doi.org/10.1002/(SICI)1097-0266(199606)17:6%3C441::AID-SMJ819%3E3.0.CO;2-G

Lafley, A.G. (2013). What P&G Learnt from the Diaper Wars. FastCompany. Feb. 8. https://www.fastcompany.com/3005640/what-pg-learned-diaper-wars

Porter, M. E. (1980). *Competitive strategy*. New York, N.Y.: Free Press.

Notes

Note 1. Profit Impact of Market Strategies.

Note 2.

https://www.google.com/search?q=history+of+disposable+diapers&rlz=1C1RXQR_enUS1053US1053&oq=&aqs=chrome.0.35i39i362l8.4350j0j15&sourceid=chrome&ie=UTF-8

Note 3.

https://www.google.com/search?q=history+of+pampers+disposable+diapers&sca_esv=566970484&rlz=1C1RXQR_enUS1053US1053&sxsrf=AM9HkKkqNZXfs_UuKa1kkLdFFwaukIEo2A%3A1695230904651&ei=uCsLZb22J-XakPIPy5OksAc&ved=0ahUKEwi98oif27mBAxVlLUQIHcsJCXYQ4dUDCA8&uact=5&oq=history+of+pampers+disposable+diapers&gs_lp=Egxnd3Mtd2l6LXNlcnAiJWhpc3Rvcnkgb2YgcGFtcGVycyBkaXNwb3NhYmxlIGRpYXBlcnMyChAAGEcY1gQYsAMyChAAGEcY1gQYsAMyChAAGEcY1gQYsAMyChAAGEcY1gQYsAMyChAAGEcY1gQYsAMyChAAGEcY1gQYsAMyChAAGEcY1gQYsAMyChAAGEcY1gQYsANI-QhQAFgAcAF4AZABAJgBAKABAKoBALgBA8gBAOIDBBgAIEGIBgGQBgg&sclient=gws-wiz-serp

Note 4.

https://www.companieshistory.com/pampers/#:~:text=In%201956%2C%20a%20P%26G%20researcher,Pampers%20were%20introduce

Note 5.

https://www.kimberly-clark.com/en-us/-/media/kimberly/pdf/innovation/productevol_disposablediaper_umbracofile.pdf

Note 6. This data is from food stores with sales of over $2 million, and drug stores over $ 1 million; it also includes discount stores, such as Target and K-Mart, but *excludes* Wal-Mart as well as warehouse clubs, e.g., Sam's Club, Costco, and BJ's. It also does not include the "dollar" stores, such as Dollar General, and others.

Note 7. For those stores for which, during a week, there were feature ads, coupon ads, display, or temporary price decrease of at least 5%.

Note 8. The six classes are: "The Poor", "The Near Poor", "Traditional Middle Class", "The Upper-Middle Class", "The Very Rich/The Rich", and "The Mega Rich—Masters of the Universe".

The six classes are: "The Poor", "The Near Poor", "Traditional Middle Class", "The Upper-Middle Class", "The Very Rich/The Rich", and "The Mega Rich—Masters of the Universe".

Note 9.
https://www.google.com/search?q=google%3A+why+are+baby+disposable+diapers+so+expensive&rlz=1C1RXQR_enUS1053US1053&oq=&gs_lcrp=EgZjaHJvbWUqCQgAECMYJxjqAjIJCAAQIxgnGOoCMgkIARAjGCcY6gIyCQgCECMYJxjqAjIJCAMQIxgnGOoCMgkIBBAjGCcY6gIyCQgFECMYJxjqAjIJCAYQIxgnGOoCMgkIBxAjGCcY6gLSAQk1MTA5ajBqMTWoAgiwAgE&sourceid=chrome&ie=UTF-8

Note 10. https://us.pg.com/annualreport2022/

Note 11. KMB 2022 FORM 10K (kimberly-clark.com)

Note 12.
https://investor.kimberly-clark.com/news-releases/news-release-details/kimberly-clark-celebrates-150-years-purpose-led-innovation