Journal of Economics and Public Finance
ISSN 2377-1038 (Print) ISSN 2377-1046 (Online)
Vol. 6, No. 4, 2020
www.scholink.org/ojs/index.php/jepf

Original Paper

The U.S. Potato Chip Market: A Competitive Profile

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Received: November 8, 2020 Accepted: November 24, 2020 Online Published: November 27, 2020

doi:10.22158/jepf.v6n4p86 URL: http://dx.doi.org/10.22158/jepf.v6n4p86

Abstract

This paper follows the footsteps of ten studies that have tried to analyze the competitive profile 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, and Coffee.

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.

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.

*In 2008 the U.S. retail sales for the Potato Chip market were $3.07 Billion. The pack sizes varied from 0.8oz to 50oz, with the 9-*13oz *packs being the most popular with a 33% share. So, we have focused cluster analysis on this size.*

In 2008 the U.S. Potato Chip market was highly competitive—notwithstanding the dominance of Pepsi Co.'s Lay's brand family—with a total of 254 brands.

Using Hierarchical Cluster Analysis, we tested two hypotheses: (1) That the market leader is likely to compete in the mid-price segment, and that (2) Its unit price is likely to be higher than that of the nearest competition. Employing U.S. retail sales data for 2008 and 2007 we found that the results supported Hypothesis I; both the market leader Lay's Plain Potato Chip brand--and the runner-up Pringles Original Potato Chip brand--were members of the mid-price segment. However, while the unit

price of the market leader was somewhat higher than that of the runner-up for 2008—as we have hypothesized--this was not the case for 2007, although the price difference between the two brands did not seem statistically significant.

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

We also discovered four strategic groups in the industry.

This is the eleventh in the study of U.S. consumer markets we have cited above. In eight of these—that exclude Men's and Women's Razor-Blades, and Ground Coffee—a pattern has emerged. In all eight cases the market leader was a member of the mid-price segment, as we have hypothesized.

Finally, in the words of Dirk Burhans, the author of Crunch, it is important to realize that a "potato chip could be such a subtle, delicate experience".

Keywords

U.S. Potato Chip Industry, cost leadership strategy, price-quality segmentation, market-share leadership, relative price a strategic variable, strategic groups

1. Introduction

This paper follows the footsteps of ten studies that have tried to analyze the competitive profile 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, and Coffee (Datta, 2012, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c).

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 Porter (1980) suggests. Rather, it is based on the premise—according to the PIMS database research (Note 1)—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, 2012, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c).

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, 2012, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c). 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, 2012, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c).

1.1 The Strategic Importance of Price Positioning

In a competitive market one would normally expect more than one major brand competing in the *mid-price* segment. So, 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*).

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, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c).

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, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c).

1.2 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: 2010b, 2012, 2017, 2018a, 2018b, 2018c, 2019a, 2019b, 2020a, 2020b, 2020c).

2. A Short History of the U.S. Potato Chip Industry (Note 2)

2.1 Birth of Potato Chip

Saratoga Springs, New York is located on the southeast edge of the Adirondacks Mountains. Before air conditioning, wealthy New Yorkers used to visit it to escape the summer heat and humidity of New York City. The legend has it that Moon Lake House, an upscale hotel in Saratoga Springs, is the *birthplace* of potato chip. The most plausible version is that in 1853 Katie Speck Wicks *accidentally* invented potato chip when she was frying crullers and peeling potatoes at the same time. As luck would have it, a *thin* slice of potato found its way into the frying oil for the crullers, and so Katie fished it out and showed it to Chef George Crum. After tasting it Crum said that that's a *good* accident. And that is how potato chip was *born* (Burhans, 2017, p. 20).

2.2 The Best Potatoes for Potato Chips: Chipping Potatoes

Chipping potatoes are *different* from potatoes for baking and salads. This is because potatoes are mostly water, and frying them in hot oil does not leave much potato matter after the water evaporates. Potato chip makers, called chippers, have tried several popular varieties of potatoes, e.g., Russets, Katahdins, and Irish Cobblers, and they found that their chip yield was around 22%. However, today chippers use modern varieties of potatoes that have a yield of 30% or higher. These varieties have *high* specific gravity which means that they have a *high* dry matter content (*ibid*, p.4).

One chipper variety is *Snowden*. Ohio farmers grow this variety especially for *winter* storage, because

fresh potatoes cannot be found from November to March. Large chip producers like Frito-Lay insist on a product that is *consistent* year round. One problem with storage of potatoes like Snowden is heat. If the temperature is too low, starch in the potatoes turns to sugar, and that results in a brown chip. If the temperature is too high, that can also yield a brown chip (*ibid*, p. 6).

However, Ohio farmers without irrigation facilities found it hard to meet the *consistency* level demanded by Frito-Lay. So, the company switched to growers in Michigan and North Dakota who had access to irrigation facilities. As such, Ohio farmers had to look for other manufacturers to sell their potato crops to.

In the past chip makers washed the potatoes themselves, but now the chippers have shifted the burden of washing to the farmers (*ibid*, pp. 6-7).

Another source of potatoes for chips is the state of *Florida*. However, Florida has one of the *highest* costs per acre for potato farming. This is because Florida's soil is *sandy* that requires chemicals; it also has *bug* problems because of its warm climate. Like their Ohio counterparts, Florida farmers, too, have to take on the extra expense of potato washing (*ibid*, p. 8).

Many growers complain that Frito-Lays and other large chip makers have imposed a standard for white unblemished potatoes that is both arbitrary and *unjustified*. Even though customers do not really care if some of the chip have minor blemishes, the large manufacturers use this as an *excuse* to drive the purchasing price of potatoes *down* (*ibid*, p.8).

As is the case with Ohio, the severe demands from large chip makers, unpredictable weather, increasing cost of fuel, insurance and chemicals put together, have made it cost prohibitive for all *but* the largest Florida farmers (*ibid*, p. 8).

In a typical year Florida potato growers may be getting two to three dollars per hundredweight, compared to a price in the teens in the 1980s and early 1990s. Fifteen years ago there were about three hundred potato farmers in Northern Florida, compared to forty or fifty today: mostly in larger farms (*ibid*, pp. 8-9).

2.3 Potato Chips Move from Kitchen to Factory

In 1895 William Tappenden of Cleveland, OH made a move from a "humble kitchen-cooked product to factory production", by converting a *barn* at the rear of his house into one of the *first* potato chip factories. Most early chip companies followed the path of Tappenden. They first started literally in the kitchen, and as sales increased, moved into an adjoining shed or garage before transferring to a real factory (*ibid*, pp. 23-24).

While Ohio is still a place of chip diversity, Lancaster County, Pennsylvania has the *highest* density of independent potato chip makers in America today (*ibid*, p. 23).

By the 1930s the Great Depression had curtailed economic opportunity generally. However, this helped the potato chip industry. Many chip businesses started during the Depression. This was the time when financial hardship forced many men and women to take risks they would not have taken in normal circumstances (*ibid*, p. 27).

Chip making in the 1920s and 1930s could be a hazardous business for more than economic reasons. At that time most chippers were making chips in *lard.* A major concern every day was *fire*, and if the kettles caught fire everything might blow up, an event that could happen every two or three months. Occasionally, even an entire plant might end up in flames (*ibid*, pp. 27-28).

2.4 The Continuous Potato Chip Cooker

In the 1920s and 1930s *kettles* were rectangular cookers that had the capacity of cooking from 40 to 120 pounds per hour. By 1929 all potato chips were still being made using this *batch* process: *one* lot at a time (*ibid*, p. 29).

This was the time when J. D. Ferry Co. of Harrisburg, PA became successful in inventing a *continuous* cooker for potato chips. The cooker allowed uncooked potato slices introduced at one end that were carried downstream in hot oil, through a system of paddles to the other end: a process that took three to four minutes. So, it was no longer necessary to cook potato chips by the batch (*ibid*, pp. 29-30).

But the Ferry cookers were *not* for everyone. They were very large and extraordinarily expensive, and most companies could not afford them (*ibid*, p. 30).

2.5 Dixie Wax Paper Co. Invents a Truly Sealed Bag

Mass production was not the only problem the chip makers were facing during the early twentieth century. The other problem confronting them was that they could *not* keep their stock of potato chips fresh, nor could they distribute them to customers that were *not* close to their factory (*ibid*, p. 30).

Laura Scudder, owner of a potato chip business in Monterey Park, California noticed that grocers had to go through a cumbersome procedure for a bag of chips. The grocer had to open a glass case or barrel, reach inside, scoop and weigh chips--which were sold by the ounce or pound--into a paper bag (*ibid*, p. 31).

Scudder decided to *bypass* bulk display entirely. She instructed her female employees to take empty bags at home at night and iron slips of *wax paper* inside near the neck of the bags. Next day after filling the bags with chips the workers ironed the top *airtight* shut (*ibid*).

Now chips could be displayed on a shelf in bags, getting rid of the need to ladle them out behind a counter. Furthermore, the airtight wax seal kept the chips fresher longer (*ibid*).

In 1934 the Dixie Wax Paper Co.--maker of the Dixie Cup—finally came up with a *truly* sealed bag, the Fresheen bag, using glassine. This innovation *revolutionized* the industry. It took potato chips off the counter, and made it possible to ship them to distances *more* than twenty miles from the factory (*ibid*, p.33).

2.6 Birth of Frito-Lay

Following the Great Depression in the early 1930s *Herman Lay* lost his job as a salesman. He then became a distributor for an Atlanta-based snack producer called Barrett's who sold Gardner potato chips. When Barrett died his widow was faced with a failing business. So Lay raised enough cash to buy Barrett's three plants (*ibid*, p. 40).

This was the start of a *strategy* of "Buying up small:" an idea few in the industry had considered before

(*ibid*, p. 42).

Next, Lay set out on a buying spree that involved several small potato chip businesses that covered a wide-ranging area that included Virginia, West Virginia, Ohio, Missouri, and Wisconsin. Buying out small chippers was not Lay's only strategy. He also built *new* plants in Mississippi, Kentucky, North Carolina, Georgia and Washington, D. C. (*ibid*, p. 44).

Elmer Doolin was the owner of an ice cream business in San Antonio, TX. One day he was fascinated by a package of corn chips--that had been fried in oil--he bought at a small restaurant. As it turned out, the owner was a Mexican who wanted to sell his business. So, Doolin "bought the man's recipe, rights to his retail accounts and his production equipment—an old, hand-held potato ricer". And that is how *Fritos* were born (*ibid*, pp. 44-45).

Within a year, Doolin moved out to a geographically favorable city of Dallas to start his own manufacturing plant (ibid, p. 45).

At that time Herman Lay was buying and building in the *Southeast*, while Doolin was expanding in the *Southwest* and elsewhere. Frito was also adding potato chips to its product line by buying existing potato chip makers (ibid).

In 1945, Frito entered into an agreement with H.W. Lay & Co. giving Lay exclusive rights not only to distribute but also to manufacture Fritos in the Southeast (*ibid*, p. 45).

The two companies *merged* in 1962. This merger resulted in two *nationally* distributed snacks: Cheetos and Frito's, both corn chips. Surprisingly, there was *no* nationally distributed brand of potato chip in the United States at that time. So, over the next four years Frito-Lay converted its regional potato chip brands to a *single* national brand: *Lay's*. By 1965 Lay's chips were in *every* state in the U.S. (*ibid*, pp. 45-46).

2.7 Potato Chips and Television: A Symbiotic Relationship

One factor that contributed to this rapid expansion of Frito-Lay's national distribution network was the onset of a *new* advertising medium that had become quite prominent at that time. "A friend *to* potato chips from the start, it was to benefit *from* potato chips as well—an ecologically *symbiotic* relationship if there ever was one". And that advertising medium was: *Television* (*ibid*, p. 46, *italics* added).

People often like to eat *snacks* while watching TV. While Television depends upon advertising revenue, snack foods depend upon Television for promotion. In the early days of TV the biggest beneficiary of the trend toward eating while watching TV was the *potato chip*. It was at this time that the industry *shifted* from flat-cut chip towards "rippled", "wavy", and "marcelled" chip. This was the time when Frito-Lay introduced *Ruffles*: a *thicker* and sturdier potato chip with *ridges* (*ibid*, p. 47).

2.8 P&G Introduces Pringles

In the 1960s technological improvements in food were considered a good thing. Not until the 1970s, there was increasing use of additives to improve shelf life, of dehydration, and reconfiguration of foods to alter texture and to bolster attractiveness (*ibid*, p. 56).

In 1967 P&G introduced Pringles, a *prefabricated* potato chip. P&G devised a tennis ball *canister*

where perfectly formed half-moon Pringles could be stacked together *unbroken* (*ibid*, p. 57).

General Mills was the first to introduce a prefabricated potato chip, *Chipos*. The potato chip industry took General Mills to the court arguing that the term *chip* should not apply to Chipos because they were not natural or real. However, in 1971 the judge ruled that the term "potato chip" *could* be used if the package prominently *displayed* that Chipos were made from "dried or dehydrated potatoes" (*ibid*, p. 57).

Ironically, the end result was that the sales of Pringles appeared to *expand* the overall chip market boosting the sales of *real* potato chips which were still *preferred* by consumers (*ibid*, p. 59).

The Kellogg Co. acquired Pringles from P&G in 2012 (Hsu, 2012).

2.9 Frito-Lay Merges with PepsiCo

After the Frito-Lay merger in 1962—and after the company had bought four more chip companies—the Federal Trade Commission (FTC) began to focus on its activities. But in 1965 Frito-Lay merged with PepsiCo, thus making it even more powerful. Taking advantage of this merger PepsiCo wanted to use an advertising that said: "Potato chips make you thirsty; Pepsi satisfies thirst". The FTC ruled that PepsiCo could not use such advertising "tie-ins" between Pepsi drinks and its snacks. Furthermore, the FTC barred PepsiCo from acquiring any snack or soft drinks maker for a period of ten years. In 1968 the FTC ordered Frito-Lay to sell ten of its twenty eight plants to Nefco, Inc. of Arkansas for $9.6 million (*ibid*, p. 60).

2.10 Frito-Lay's Powerful Distribution System

Frito-Lay set up a unique "store-door" distribution system that *bypasses* warehouses: a system that has become the *envy* of the industry. These route men *enter* each store and check store shelves regularly, making sure the stocks are orderly, fresh, and full. Frito-Lay also replaced smaller step vans with tractor-trailer semis, that resulted in cutting down on the number of drivers: thus making the system more *efficient* (*ibid*, p. 61).

But, *more* importantly, the moving spirit behind Frito-Lay's highly profitable operations is its "10,000 person sales force and its 99.5% service level" (Peters & Waterman, 1982; MacMillan, 1983).

2.11 Borden's Unsuccessful Foray into the Potato Chip Market

Starting in 1982, Borden, a food products company, began buying small potato chip companies. While Frito-Lay had a nation-wide distribution system, Borden wanted to be a regional company.

Borden decided to follow a *hyper-plant* strategy to run *large* volumes of a single or multiple products. This strategy maximized capacity with a "complete product line to eliminate reshipping". While this strategy made a lot of sense for Frito-Lay, it was *not* appropriate for Borden which wanted to be a *regional* company (*ibid*, p. 64).

In almost every case, Borden's plants were as big or bigger than those of Frito-Lay. Every chip that Borden made was *tailored* to each market, and so it made no sense to put it under one roof. Producing several regional chip brands at one site would require frequent *changes* of fryer oil, because while one chip might use cottonseed oil, another used corn oil, which also made packing and distribution more

complicated (*ibid*, p. 65).

By 1996, Borden's market share of its salty snack market had slipped from a high of 12% to 5%. So, Borden announced that it was going to get out of this market and *sell* its salty snack division (*ibid*, p. 74).

2.12 Anheuser Busch's Failed Attempt to Succeed in the Potato Chip Market

In 1979, Anheuser Busch, the leading beer company in America, decided to enter the salty snack business with its new *Eagle* line. The company believed it can use its existing *beer* distribution system to sell Eagle salty snacks. However, local Anheuser Busch distributors saw chip distribution as "more *diversion* than delight (*ibid*, pp. 65, 68, *italics* added).

Eagle not only *gave away* chips on airlines, it paid a lot of money—*slotting fees*—for shelf space in supermarkets that guaranteed *prime* placement (*ibid*, p. 66).

Customers who are regular customers know their way to the *snack* aisle. However, *impulse* buyers--who accounted for much of the snack food sales--were more likely to buy snack foods that had *prime* positioning: such as "endcap at the head of an aisle, or a freestanding display at the door". New products like Eagle were doomed to failure if placed among sixty feet of *competing* brands, but if they were placed near the door they had a fighting chance. One result of this move by Eagle was that it *forced* everyone else to follow Eagle's example. Second, it put *small* regional companies at a big disadvantage because they could *not* afford the hefty slotting fees (*ibid*, p.66).

2.12.1 Kettle Chips Stage a Come-Back

Before 1929, when Ferry automatic cookers were introduced, every chip maker used the kettle technology to make potato chips. But, thereafter the kettle technology became outmoded. However, in 1980 when Steve Bernard started Cape Cod in Massachusetts, kettle chips began their *resurgence*. Kettle cooking produced a *harder, thicker* chip: a chip entirely *different* from the average picnic-style chip that was quite common then throughout the United States (*ibid*, p. 67).

So, Eagle bought Cape Cod Potato Chip Co. in 1985 (Note 3). By 1985 Eagle chips were available in all fifty states (*ibid*, p.67). By 1994 Eagle's sales were up by 7%. Ironically, however, when you have only a 6% market share, a 7% increase in sales didn't mean very much (*ibid*, p. 68).

Thanks to Anheuser Busch's deep pockets Eagle decided that the best way to stay in the business was to engage in price *slashing*. Eagle priced its snacks as much as 20% *below* Frito-Lay's prices. Reluctantly Frito-Lay had to go along with this move on the part of Eagle (*ibid*, p. 70).

In 1991 while sales of Eagle snacks were growing, those of Frito-Lay were declining. So, Frito-Lay went to work and came up with a low-fat *baked* potato chip, as we have noted below. The company also embarked upon improving the existing Lay's and Ruffles lines by changing from soy to cottonseed oil. These moves seemed to work, and Frito-Lay's profits grew by 15% during the first half of 1992 alone. In 1996 *U.S. News and World Report* noted that there was a *94%* chance that every American household had at least one Frito-Lay product (*ibid*, p. 71).

After Eagle sustained a loss of $25 million in 1995 alone, Anheuser Busch finally threw in the towel,

and decided to withdraw from the snack business (*ibid*, p.82).

2.13 Frito-Lay Introduces Low-fat Baked Potato Chip

In 1994 Frito-Lay introduced a *baked* potato chip. While typical potato chips have total fat levels around 10 grams, today's Lay's baked potato chips have a total fat score of 1.6 grams. Customers liked them so much that the chips "flew off the shelves". The key to a successful baked potato chip is to create a potato chip that tastes and feels like potato chip, *yet* contains no adverse effects from fats (*ibid*, p. 123).

2.14 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 name brands. One reason retailers *like* private brands is because private brands tend to be more profitable than name brands (Datta, 2018b, 2018c, 2020b, 2020c).

In 2008 Private Brands had 6.3% share of the overall U.S. Potato Chip market (Table 1).

2.15 Regional Players

2.15.1 Utz

Utz is a family-owned food company, based in Hanover, Pennsylvania, It was founded in 1921. Most of its distribution is limited to the *eastern* United States. Today Utz is also a leading nation-wide (Notes 4, 5) snack supplier to warehouse clubs and mass merchandisers. In 2008 Utz's sales were $114 million with a 3.7% market share (Table 1).

2.15.2 Cape Cod

Cape Cod Potato Chips Co. of Hyannis, Massachusetts was founded in 1980 by Steve and Jude Bernard with the idea of offering *healthier* foods with as little processing as possible. As we have mentioned earlier in this section, Anheuser Busch's Eagle Division acquired Cape Cod in 1985. However, in 1996 Bernards bought the business back from Anheuser Busch after the latter quit the business. In 2017 Campbell Soup Co. became the owner of Cape Cod Co. (Note 3).

Typically, most commercial chip brands are made using a *continuous* frying process in which potato slices travel through a tub of oil on a conveyer belt. On the other hand, Cape Cod chips are cooked in *batches* in *kettles*, frying them in a shallow vat in oil while *stirring* with a rake that produces a *crunchier* chip (Note 6). In summer when tourists visited Hyannis, they bought Cape Cod kettle chips and also took them back home, where they became a hit (Burhans, 2017, p. 144).

In 2008 Cape Cod's sales were $91 million with a market share of 2. 9% (Table 1).

2.15.3 Kettle Foods, Inc.

Potato growers generally make sure that sugars do not build up in stored potatoes because sugars can turn chips brown that gives them an "off" flavor and texture. However, certain varieties of potatoes that are *high* in sugar can lend chips a unique *taste* that can appeal to the *connoisseur* segment (*ibid*, p. 136).

Kettle brand chips are sold in *natural* food stores. As Table 1 shows the brand is a member of the *premium* segment. In 2008 it had sales of $73 million, with a market share of 2.4%.

The company uses only high-sugar Russet Burbank potatoes. Although sugars make the Russets tough to work with, but if properly cooked, they make the *best* tasting potato chips" (*ibid*, p. 130, *italics* added).

2.15.4 Herr's Snack Co.

Herr's Snack Co. from Nottingham, Pennsylvania, was started in 1946. In 1958 the company introduced, *flavored* potato chips, and in 1974 switched to *foil* packaging from the traditional glassine bags. The company's stronghold is the Mid-Atlantic region.

In 2008 Herr's sales were $54 million with a 1.8% market share (Table 1).

2.16 New Mom-and-Pop Chip Makers Reinvent Old Technology of Kettle Chips

Finally, the history of the Potato Chip industry has revealed an *uplifting* message:

> In the wake of the "Great Potato Chip Wars" of the 1990s, corporate snack divisions closed and dozens of family-owned companies went bankrupt. Yet despite (widespread) consolidation, many small chippers *persist* into the twenty-first century, as *mom-and-pop* companies and *upstart* 'boutique' businesses serve both *new* consumers and markets with strong *regional* loyalties" (*ibid*, back cover, *italics* added).

This phenomenon seems to be *similar* to the birth of *craft* beer that began in 1965 and revolutionized the beer industry. In 2008 Craft beer had a market share of 9% (Datta, 2017).

For most of the twentieth century state-of-the-art *continuous* cookers were the industry standard. Small family-run *kettle* operations like Original Good's of Pennsylvania were the *exception*. Now kettle chip making is in *vogue* again because of the *superior* taste of kettle chips (*ibid*, p.143).

A shining example of this new generation of entrepreneurs is Martin's of York County, Pennsylvania. Today Martin's has over fifty routes and is the *most* popular potato chip in Shenandoah Valley. Also, Martin's has been the potato chip of *Air Force One* since the Clinton presidency (*ibid*, p. 143**).**

Another notable entrepreneur--and a user of *kettle* cookers--is Shearer's of Brewster, Ohio. "Shearer's has harnessed the power of kettle cookers in *sequence*, like pistons to a crankcase—all part of a superb machine that, perhaps, is the *most* powerful kettle chip engine in the industry *(ibid*, p. 142, *italics* added).

Shearer's has grown so fast that it is unable to meet its customer demand. Notably, Shearer's makes "private label" special potato chips for Frito-Lay (*ibid*).

Another important example of small new kettle chip makers is *Sarah Cohen of Route 11***.** Middletown, Virginia**.** The company's mission is to make *high* quality potato chips**.** It makes *organic* chips and its products are sold in *gourmet* and *health* food stores (*ibid*, p. 148).

3. The Potato Chip Industry: An Overview

The most important lesson one can draw from the above discussion is, that the crown jewel of Frito-Lay is its *unique* distribution system that is the *envy* of every company selling food products in this country. Thanks to this system, there is a *94%* chance that every American household has at least *one* Frito-Lay product, as we have mentioned earlier. It is a fortress that all the money and might of Anheuser Busch--and Borden--could not penetrate.

In 2008 Frito-Lay had a commanding 57% share of the U.S. potato chip market (section 6), mostly in the *mid-price* segment. Given that situation—and considering its formidable distribution system—the first thing for a competitor to do is to *avoid* head-to-head competition with Frito-Lay as much as possible. There are generally *four* options, which are not necessarily mutually exclusive, to succeed in the potato chip market under these circumstances.

One is to offer a chip of *higher* quality or taste. This is a strategy Cape Cod and Kettle Foods have followed, and both are in the *premium* segment (Table 1). Furthermore, Kettle Foods chips are sold in *natural* food stores.

Second was to market a product that is *different* from Frito-Lay's offerings. This is the strategy P&G's Pringles has adopted: a *prefabricated* potato chip contained in a tennis ball *canister* where perfectly formed Pringles were stacked together *unbroken.* Also Pringles has priced its potato chips at prices that are *lower* than those of Lay's brands. Another example is Herr's which introduced *flavored* potato chips, and later switched to *foil* packaging from the traditional glassine bags.

Third, serve those customer segments that are not Frio-Lay's main focus. Utz followed this strategy. It is a leading supplier to warehouse clubs and mass merchandisers.

Fourth, sell potato chips at a *low* price. This is the strategy Private Brands have pursued by competing in the *economy* segment (Table 1).

4. The U.S. Potato Chip Market—Price-Quality Segmentation Profile

This study is based on U.S. retail sales for 2008 and 2007 (Note 7). The data includes total dollar and unit sales, no-promotion dollar and unit sales, and promotion dollar and unit sales (Note 8).

The market leader was *Lay's Plain Potato Chip* brand with an overall brand market share of 30.5%, followed by *Pringles Original Potato Chip* brand with 10.7% brand share (Table 1). For 2008 the total U.S. retail Potato Chip sales were $3.07 Billion. The pack sizes varied from 0.8oz to 50oz, with the 9-13oz packs being the most popular with a 33% share. So, we have focused cluster analysis on this size.

4.1 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* 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.

4.2 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 is 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).

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 9). 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).

4.3 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):

- 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. Next, 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 consist of two *sub*-segments (see Table 1).

4.3.1 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).

4.4 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.

4.5 Results of Hierarchical Cluster Analysis

In Table 1 we present the cluster analysis results for 2008 that involved 28 potato chip brands with pack sizes ranging from 9-13 oz, and sales over $10M. The results support both Hypothesis I and II. Both the market leader *Lay's Plain 12oz* Potato Chips (hereafter Lay's in this section)--and the runner-up, *Pringles Original 12oz* Potato Chips (hereafter Pringles in this section)--were members of the *mid-price* segment with an overall brand family market shares of 30.5% and 10.7%, respectively.

While the data supported Hypothesis I for 2007, it did not technically support Hypothesis II. This is because the unit price of the runner-up Pringles was $2.38, just a little *higher* than $2.33 for the market leader Lay's: a difference that does not seem to be statistically significant.

To have a better understanding of the above results for 2007, let us look at the unit price data for 2008 and 2007 *together.* As we have mentioned earlier, a business seeking market share leadership should position itself at a price that is *somewhat* higher than that of the nearest competition.

At the beginning of 2008 Frito-Lay's management must have realized that the unit price of Lay's for 2007 was 5 cents *lower* than that of Pringles. So, it is reasonable to argue that, based on the theoretical arguments we have espoused in this study, they *raised* Lay's unit price by 11% from $2.33 to $2.59 in 2008 (as it actually turned out), clearly *ahead* of the corresponding $2.43 price for Pringles.

It is also interesting to note that that in spite of the price rise Lay's sales more than doubled from $102 million in 2007 to $236 million in 2008.

To sum up:

We submit that the foregoing discussion further *strengthens* the premise behind Hypothesis II: that the unit price of the market leader is likely to be *higher* than that of the runner-up.

4.6 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 Potato Chips. 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 management in the U.S. Potato Chip industry must have been treating *relative* price as a strategic variable, as we have suggested.

While the price of a brand, compared to its nearest competition, may change over time, it is *unlikely* to change much from one year to the next. This is significant not only for the market share leader, but also for every brand no matter which price-quality segment it is competing in.

Another conclusion one can draw from such impressive results is that the U.S. Potato Chip market was quite competitive in 2008--notwithstanding the dominance of PepsiCo's Lay's brand family—with a total of 254 brands.

4.7 The Role of Promotion

For 2008 promotional sales of the U.S. Potato Chip market averaged 54% of net retail sales. We performed *bivariate* correlation between total (net) retail sales vs. promotional (PROMO) sales. The results were significant for *all* three measures—Pearson, Kendall, and Spearman—at the 0.01 level.

Table 2 presents a measure of the promotional intensity of 18 brands for 2008. Before we discuss the highlights of this table, let us find out the level of promotional intensity in the previous ten studies we have cited at the beginning of this paper.

These ten studies fall into two groups: Non-Food and Food. In the *Non-Food* group the promotional intensity scores are: 11% (Men's Blades), 15% (Women's Blades), 30% (Men's Shaving Gel), 32% (Shampoo), and 37% (Toothpaste).

The numbers in the *Food* group are: 36% (Canned Soup), 44% (Coffee), 46% (Refrigerated Orange Juice), 46% (Shredded/Grated Cheese), and 48% (Lager Beer).

The question is why discount intensity in the *non-food* group is much *lower* than that of the food group. We believe one reason is that the products in the non-food groups serve *personal care* needs for which most customers do not need a level of discount they get for most products in the food group. Second, while most of the products in the food group have many substitutes that is generally *not* the case for the non-food group. Third, consumers have to go to the supermarkets frequently to buy food. So, manufacturers offer *higher* discounts for food products to entice them to spend more money and to shop even *more* often.

The following are the highlights of results in Table 2:

- *Lay's Wavy* brand is in the *Ultra Heavy* group with a score of 76%.
- *Lay's* brand family (hereafter Lay's in this section) with a market share of 30.5% is a member of the *Very Heavy* group with a score of 66%.
- *Pringles*, the runner-up, and *Private Brands*, are in the *Heavy* group with scores of 50% and 54%, respectively.
- *Ruffles—a potato chip with ridges*---a member of the Frito-Lay's family, is in the *Moderate* group with a 37% score.
- Finally. *Lay's Light* and *Ruffles Light* fall in the *Very Low* group with scores of 5.6%, and 4.3%, respectively.

It is interesting to note that the average Potato Chip score of 54% is *higher* than the 48% for Lager Beer which is highest in the five food brands we have cited above. But, more importantly, Lay's score of 66% is extraordinarily high! One reason for these high numbers seems to be is that the demand for potato chips is more *discretionary* in character than the five food products mentioned above.

Also it is remarkable to see that the *Ruffles Light* and *Lay's Light* brands are in the *Very Low* group. Clearly, customers who are *weight* conscious are willing to pay higher prices for *low-calorie* potato chips.

5. Pattern Emerging in Price-Quality Segmentation Analysis

This is the *eleventh* study that encompasses analysis of competitive profiles of U.S. consumer markets. All these studies involved a testing of two hypotheses. The *primary* hypothesis is: (I) That the market leader would be a member of the *mid-price* segment, and the *secondary* hypothesis is: (II) That the unit price of the market leader would be somewhat *higher* than that of the *nearest* competitor.

5.1 Results in Eight Markets Support Hypothesis I

In *eight* of the eleven studies—that *exclude* Men's and Women's Razor-Blades, and Ground Coffee—the market leader was found to be a member of the *mid-price* segment, as we have hypothesized. Those market leaders were:

(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, and (8) Lay's Potato Chips.

In *six* of these markets—that exclude Shampoo and Canned Soup--the unit price of each market leader was somewhat *higher* than that of its runner up, and that both were members of the *mid-price* segment, according to our hypothesis.

In the Shampoo market, the *runner-up,* Head & Shoulders was a member of the *mid-price* segment like Pantene, the market leader. However, its unit price was *higher* than that of Pantene.

A simple explanation of this deviation is that while the market leader Pantene is a *regular* shampoo, Head & Shoulders is a *specialty anti-dandruff* shampoo: a *kind* that is always *more* expensive (Datta, 2018a).

We could *not* test Hypothesis II for *Chicken Broth*, but for *Chicken Noodle Soup*, the *runner-u*p Progresso was competing in the *premium, not* the *mid-price* segment.

This deviation, too, can be explained. As we have noted earlier, that while *Progresso* did manage to become the *runner-up* in the Canned Soup market, its market share was just *one-third* that of Campbell's, the market leader. Therefore, it could *not* be considered a direct competitor of *Campbell*, and as such, this result does not necessarily negate Hypothesis II (Datta, 2020b).

5.2 Results in the Coffee Market Do Not Support Hypothesis I

One study that *contradicted* Hypothesis I was the *Ground Coffee* market. Astonishingly, the market leader *Folgers* was a member of the *economy* segment! This means that Folgers was following the *cost*

leadership strategy, *instead* of pursuing a strategy of higher quality, as we have hypothesized. Yet, while the runner-up *Maxwell House* was also competing in the *economy* segment, its unit price was *lower* than that of the market leader *Folgers*, as we have hypothesized.

The spectacular success of Starbucks in the Coffee market demonstrated in no uncertain terms that the consumers were *no* longer content to treat coffee as a run-of-the mill drink—but rather something *special*—that deserved to be *relished*, and for which they were willing to pay *a premium* price (Datta, 2020c).

5.3 Results of Men's and Women's Razor-Blade Markets Do not Support Hypothesis I

In Men's Razor-Blades the market leader *Gillette Mach 3* was a member of the *premium* segment. The following arguments can be advanced to explain this *divergence (*2019a*)*:

- The technology for making Men'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 contributing to higher prices.
- Many men consider shaving an important part of *personal grooming*, for which they are willing to pay *premium* prices: because they regard it as an "affordable luxury" (Datta, 2010b, 2019a).

The market leader in the Women's Razor-Blade market--*Gillette Venus (Original)*—was also a part of the *premium* segment.

We offer the following arguments to explain this departure from what we have postulated in this study (Datta, 2019b):

- The technology for making Razors and Blades has now become quite complex—and expensive--as mentioned above.
- Producers are now offering many more new features—and benefits--than ever before that further raises the cost of production.
- For many American women, having smooth armpits and legs is an important facet of *personal care*--and a *social* norm they must adhere to--for which they are willing to pay a *premium* price (Datta, 2010b, 2019b).

6. Strategic Groups in the U.S. Potato Chip Market, 2008

We found *four* strategic groups in this market. Their market shares are as follows:

1. PepsiCo-- *Market leader*
   Lay's brand family: 44.1%
   Ruffles brand family: 12.9%
2. The Kellogg Co.—*Runner-up*
   Pringles: 10.7%

3. Private Brands: 6.3%
4. Regional Players

Utz: 3.7%

Cape Cod: 2.9%

Kettle Chips: 2.4%

Wise: 1.9%

Herr's: 1.8%

6.1 The PepsiCo Inc.

PepsiCo is a leading global company in convenient foods and beverages. The company's sales for the year 2019 were $67.2 Billion. In North America the Frito-Lay segment produced by far the highest profit at 45% (Note 11).

6.2 The Kellogg Co.

The Kellogg Co. is a diversified food products Company. It had sales of $13.6 Billion in 2019 (Note 10).

Table 1. Hierarchical Cluster Analysis: The U.S. Potato Chip Market, 2008 (10-13 Oz)

Price-Quality Segment	BRANDS--POTATO CHIPS Sales Over $10M (28)	UnitPrice	ClusCtr.	Brand	Brand $M	Brand $M
	2008			**MSh%**		**9-13 Oz**
Super-Premium	LAY'S *BAKED* ORIGINAL 9 Oz	$3.50	**$3.50**	3.3%	$101.03	$32.92
	RUFFLES *BAKED* ORIGINAL 9 Oz	$3.49		1.6%	$49.98	$20.26
Premium I	RUFFLES ORIGINAL 12 Oz	$3.17	**$3.17**	10.3%	$317.93	$68.72
Premium II	KETTLE CHIPS PLAIN 9 Oz	$2.93	**$2.88**	2.4%	$72.85	$8.41
	CAPE COD PLAIN 8.5 Oz	$2.92		2.9%	$90.59	$23.56
	TIM'S CASCADE STYLE HOT JALAPENO 10 Oz	$2.90		0.5%	$15.28	$3.69
	LAY'S MESQUITE BARBEQUE 9 Oz	$2.89		##	##	$20.77
	LAY'S JALAPENO 9 Oz	$2.89		##	##	$16.70
	HAWAIIAN SWEET MAUI ONION 9 Oz	$2.88		0.4%	$11.84	$4.34
	GOLDEN FLAKE PLAIN 12 Oz	$2.86		0.9%	$27.52	$4.15
	SNYDER OF BERLIN ORIGINAL 14 Oz	$2.84		0.5%	$14.26	$3.56
	KRUNCHERS! ORIGINAL 9.625 Oz	$2.83		0.4%	$12.00	$3.84
Mid-Price	OLD DUTCH PLAIN 12 Oz	$2.72	**$2.47**	0.7%	$21.74	$4.87
	MIKE-SELL'S ORIGINAL 11.5 Oz	$2.60		0.6%	$17.02	$2.23
	LAY'S PLAIN 12 Oz (market leader) ##	**$2.59**		**30.5%**	**$938.84**	**$236.28**
	LAY'S WAVY HICKORY BARBECUE 11.5 Oz	$2.56		*	*	$22.57
	SHEARER'S PLAIN 11.5 OUNCES	$2.56		0.4%	$12.60	$5.27
	BETTER MADE PLAIN 11.75 Oz	$2.51		0.5%	$15.22	$4.71

	PRINGLES ORIGINAL 12 Oz (runner-up)	**$2.43**		**10.7%**	**$329.09**	**$5.63**
	HERR'S PLAIN 11.5 Oz	$2.36		1.8%	$54.38	$17.38
	JAYS BARBEQUE 11 Oz	$2.36		#	#	$2.38
	LAY'S WAVY ORIGINAL 13 Oz *****	$2.36		8.8%	$269.43	$46.63
	UTZ PLAIN 10.5 Oz	$2.35		3.7%	$114.26	$35.82
	MARTIN'S PLAIN 10 OUNCES	$2.35		0.4%	$13.28	$2.59
	JAYS PLAIN 11.5 OUNCES Oz #	$2.33		0.7%	$22.72	$10.00
Economy	WISE PLAIN 8 Oz	$1.85	**$1.80**	1.4%	$43.44	$15.84
	WISE RIDGIES PLAIN 8 Oz	$1.81		0.5%	$14.50	$5.26
	PRIVATE BRANDS PLAIN 11.5 Oz	$1.73		6.3%	$194.02	$16.22
	Total			**90.3%**	**$2,773.81**	**$644.61**
	Total Sales--All Brands			**100.0%**	**$3,073.14**	

Note. ##Sales data included in Lay's Plain, 12 oz.

*Sales data included in Lay's Wavy Original, 12 oz.

#Sales data included in Jays Plain 11.5 oz.

Table 2. Percentage of Promotional Sales to Total Sales: U.S. Potato Chip Market, 2008

POTATO CHIPS 2008	**PrQlySgmt**	**Promo**	**Promo$2008**	**MKSh%**	**Sales 2008**
		Intensity	**%**		**$M**
18 Brands with Sales >$15M					
LAY'S WAVY	Mid-Price	**Ultra Heavy**	76.2%	8.8%	$269.4
OLD DUTCH	Mid-Price		70.0%	0.7%	$21.7
LAY'S	Mid-Price	**Very Heavy**	65.8%	30.5%	$938.8
JAYS	Mid-Price		64.1%	0.7%	$22.7
WISE	Economy		60.1%	1.4%	$43.4
GOLDEN FLAKE	Premium II	**Heavy**	56.1%	0.9%	$27.5
PRIVATE BRANDS	Economy		53.9%	6.3%	$194.0
UTZ	Mid-Price		52.3%	3.7%	$114.3
HERR'S	Mid-Price		50.0%	1.8%	$54.4
PRINGLES	Mid-Price		49.6%	10.7%	$329.1
KETTLE CHIPS	Premium II		49.0%	2.4%	$72.8
CAPE COD	Premium II		47.7%	2.9%	$90.6
MIKE-SELL'S	Mid-Price	**Moderate**	39.3%	0.6%	$17.0
RUFFLES	Premium I		37.0%	10.3%	$317.9
LAYS BAKED!	Super-premium		30.0%	3.3%	$101.0
RUFFLES BAKED!	Super-premium		29.3%	1.6%	$50.0
LAY'S LIGHT	Mid-Price	**Very Low**	5.6%	0.7%	$22.9
RUFFLES LIGHT	Mid-Price		4.3%	1.0%	$31.7

7. Conclusion

The path to market share leadership does *not* lie in lower price grounded in *cost leadership* strategy, 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 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.

Saratoga Springs, NY is the place where potato chip was accidentally discovered in 1853. At first potato chips were served nightly at local restaurants in Saratoga Springs. The practice then spread to other areas in New York State, Pennsylvania, and New England.

Potatoes for making potato chips are called *chipping* potatoes. This variety is preferred for making chips because its chip yield is much higher at 30% compared to 22% for other varieties, such as Russet potatoes, that are normally used for baking. One type of a chipping potato is Snowden. *Ohio* farmers grow this variety especially for winter storage, because fresh potatoes cannot be found from November to March. Another source of potatoes for the chips is the state of *Florida*. However, Florida has one of the *highest* costs per acre for potato farming.

Many growers complain that Frito-Lays and other large chip makers have imposed a standard for white unblemished potatoes that is both arbitrary and *unjustified*. Even though customers do not really care if some chips have minor blemishes, the large manufacturers use this as an *excuse* to drive the purchasing price of potatoes *down.*

The severe demands from large chip makers, unpredictable weather, increasing cost of fuel, insurance and chemicals put together have made it cost prohibitive for all *but* the largest potato farmers.

Those who decide to get in the business of chip making literally start in the kitchen first, and as sales increase they move into an adjoining shed or garage before transferring to a true factory.

The dominant story of the potato chip industry is that of Frito-Lay, a result of 1962 merger of two businesses: the potato chip business of Herman Lay, and the corn chip business of Elmer Doolin. At the end of 2008 Frito-Lay had a total market share of 57% in the U.S. Potato Chip market. In 1965 Frito-Lay merged with PepsiCo.

In 1967 P&G introduced Pringles, a *prefabricated* potato chip. P&G devised a tennis ball *canister* where perfectly formed half-moon Pringles could be stacked together *unbroken*. The Kellogg Co. acquired Pringles in 2012.

The secret of Frito-Lay's phenomenal success is its unique "store-door" distribution system that *bypasses* warehouses: a system that has become the *envy* of the industry. These route men enter each store and check store shelves regularly, making sure the stocks are orderly, fresh, and full. But, more importantly, the moving spirit behind Frito-Lay's highly profitable operations is its "10,000 person

sales force and its 99.5% service level".

In 2008 the U.S. retail sales for the Potato Chip market were $3.07 Billion. The pack sizes varied from 0.8oz to 50oz, with the 9-13oz packs being the most popular with a 33% share. So, we have focused cluster analysis on this size.

In 2008 the U.S. Potato Chip market was highly competitive—notwithstanding the dominance of Pepsi Co.'s Lay's brand family—with a total of 254 brands.

Using Hierarchical Cluster Analysis, we tested two hypotheses: (1) That the market leader is likely to compete in the *mid-price* segment, and that (2) Its unit price is likely to be higher than that of the nearest competition. Employing U.S. retail sales data for 2008 and 2007 we found that in essence the results supported *both* Hypothesis 1 and II for *both* years.

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

We also discovered *four* strategic groups in the industry.

This is the *eleventh* study that involves analysis of competitive profiles of U.S. consumer markets. In *eight* of the eleven studies—that *exclude* Men's and Women's Razor-Blades, and Ground Coffee—the market leader was found to be a member of the *mid-price* segment, as we have hypothesized.

Finally, as Dirk Burhans (2017)--author of *Crunch*--puts it, it is important to realize that a "potato chip could be such a *subtle, delicate* experience".

Acknowledgements

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 Potato Chip Market for 2008 and 2007, without which this project would *not* have been possible.

We also acknowledge our debt to Dirk Burhans for his insightful book on the U.S. Potato Chip industry: *Crunch: A History of the American Potato Chip* (2017).

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Notes

Note 1. Profit Impact of Market Strategies.

Note 2. Most of the discussion in this section is from Dirk Burhans' book *Crunch* (2017).

Note 3. https://en.wikipedia.org/wiki/Cape_Cod_Potato_Chips

Note 4. https://www.utzsnacks.com/pages/timeline

Note 5. https://en.wikipedia.org/wiki/Utz_Quality_Foods

Note 6. https://en.wikipedia.org/wiki/Cape_Cod

Note 7. 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 8. For those stores for which, during a week, there were feature ads, coupon ads, display, or temporary price decrease of at least 5%.

Note 9. 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 10. https://s1.q4cdn.com/243145854/files/doc_financials/2019/ar/2019-Annual.pdf

Note 11. https://www.pepsico.com/docs/album/annual-reports/pepsico-inc-2019-annual-report.pdf?sfvrsn=ea470b5_2