Information Asymmetry, Newly-Vulnerable Markets, and the Competitive Advantage of New Entrants: Capital One Financial

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Acknowledgements

We gratefully acknowledge the financial support of the Reginald H. Jones Center of the Wharton School and the cooperation and encouragement of the staff of Capital One Financial, including their Vice Chairman Nigel Morris and the President of their fraud management operations, Scott Barton.

Author Biographies

Dr. Eric K. Clemons is Professor of Operations and Information Management at The Wharton School of the University of Pennsylvania. He has been a pioneer in the systematic study of the transformational impacts of information on the strategy and practice of business. His research and teaching interests include strategic uses of information systems, information economics, the changes that information technology enables in the competitive balance between new entrants and established industry participants, product design and marketing strategies in the era of the truly informed consumer, and the impact of information technology on the risks and benefits of outsourcing and strategic alliances. Additionally, Dr. Clemons is the founder and Project Director for the Reginald H. Jones Center's Sponsored Research Project on Information: Strategy and Economics, founder and area coordinator the School's new major in Information: Strategy, and Economics, director of the School's new eCommerce major and member of the Wharton eBusiness Initiative Curriculum Oversight Committee, and member of the Faculty Council of the SEI Center for Advanced Studies in Management. His education includes an S.B. in Physics from MIT and an M.S. and Ph.D. in Operations Research from Cornell University. Dr. Clemons has thirty years experience on the faculties of Wharton, Cornell, Harvard, Hong Kong University of Science and Technology, and the Indian School of Business, and consulting experience in the private and public sectors both domestically and abroad.

Dr. Matt E. Thatcher is Assistant Professor of Management Information Systems at the Eller College of Management at University of Arizona, where he has been a member of the faculty since 1997. He holds a B.S. in economics and an M.A. and Ph.D. in information technology from the Wharton School of the University of Pennsylvania. His research is in the area of information technology (IT) strategy and economics with a focus on IT value, software patent policy design, the social costs of information privacy, and IT implementation risks. His teaching includes courses on systems analysis and user interface design for undergraduate students and courses on financial decision-making for IT investments for M.B.A. students.
Information Asymmetry, Newly-Vulnerable Markets, and the Competitive Advantage of New Entrants: Capital One Financial

Abstract

The great success of Capital One Financial can be attributed to its information-based strategy, which allows it to target and retain the most profitable customers. This has allowed the company to sustain double-digit returns on equity and double-digit increases in sales volume and profits every year since its inception in 1994. By 1995 its success in combining rapid growth with targeting of profitable accounts earned Capital One the honor of being named Credit Card Management’s “Card Issuer of the Year.” Significantly, this success has occurred even in slow or no growth mature categories, and has been generalized outside its initial business focus, domestic U.S. credit card issuance. We present a set of conditions that characterize markets where similar attack may be possible and conclude with two propositions that predict the results of similar attacks.

Keywords: Newly-vulnerable markets, information-based strategy, market entry, differential pricing, precision pricing, Capital One.
Information Asymmetry, Newly-Vulnerable Markets, and
the Competitive Advantage of New Entrants:
Capital One Financial

“You got to know when to hold 'em, Know when to fold 'em,
Know when to walk away, And know when to run.
You never count your money, When you're sittin' at the table;
There'll be time enough for countin', When the dealin's done.”¹

1. Introduction
1a. Capital One and Skill-Based Competition

In 1997, when then-president of Capital One Financial Nigel Morris described the basis of the success of the bank he had helped to create, he said simply, “We are not a traditional bank. We do not see ourselves as a bank. We are a company with an information-based strategy, whose first successful product offerings happen to be in banking.” Clearly, Capital One is a bank today, and among the most successful retail financial institutions in the world; that is, while its activities may indeed be driven by its information-based strategy, the prolonged success of the company makes it clear that whatever else Capital One is, it surely is a bank. As the senior management team noted quickly, its success in banking, and elsewhere, is due to a powerful new strategy, backed by senior management champions, and supported by extremely sophisticated technology.

Capital One is one of the best examples we have of successful attack by a small new entrant, in a mature, slow growth industry, where large incumbents already enjoyed significant brand recognition and economies of scale. In other words, when viewed as a classic industrial conflict,

¹ From the song “The Gambler.” Like the Gambler, who observes the cards, knows the situation he faces, and carefully decides when to up the ante, when to call the bet, when to quietly leave the table, and when to flee, Capital
it should not have been possible for Capital One to succeed, leaping from 15th (4Q93) to 4th (3Q05) among U.S. credit card issuers, while constantly showing double-digit growth in market size and revenues. This has been accomplished while constantly producing greater than 20% growth in earnings per share and greater than 20% annual return on equity. This case describes the interaction between Capital One’s information-based strategy and the competitive conditions in the marketplace that led to their dramatic success. Most importantly, it presents some propositions that, if they prove to be correct, will allow other firms in other industries to determine if conditions will support a similar attack on incumbents. That is, we believe that Capital One’s experience, properly explained, can be generalized to a broader theory of the use of information-based strategies to attack in a wide range of industries.

Information technology has created new industries (PC software) and new distribution channels (online shopping for everything from inexpensive and standardized books and CDs to expensive and one-off items like antiques). It has transformed other industries that are based on buying, selling, and trading, in ways that we are still learning to understand and to model; the changing nature of competition between existing securities exchanges and emerging online alternative trading venues provides but one example. But the most surprising impact may be in the changing nature of competition among firms in mature industries and the changing competitive balance between aggressive new entrants with innovative information-based strategies and apparently dominant, previously-invulnerable incumbents with strategies based on their economies of scale. We have termed this the shift from scale-based to skill-based competition, and we have characterized those markets that offer the greatest advantage to new

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One senior management is constantly assessing all available information, making informed bets, revising them, and preparing appropriate exit strategies. They and their shareholders have indeed had “time enough for countin.’”

2 This triple-double of double digit performance in three critical measures of performance is achieved by less than one percent of the S&P 500 in any given year. To achieve it this many years in a row is almost unprecedented.
entrants as *newly-vulnerable markets* [Clemons(1997)]. The credit card-issuing industry provides a well known example of a mature industry, one in which every credit-worthy American household has several bank-issued credit cards with the MasterCard or Visa franchises, as well as some or all of the following: charge and credit cards from American Express, Discover cards, individual store cards, and gasoline company cards. Capital One Financial provides an instructive illustration of a new attacker, entering as a credit card issuer in the mid-1990s with a novel information-based strategy, and quickly rising to the status of a major player in the bank-issued credit card industry.

It is, of course, difficult to imagine any skill-based innovation in strategy, indeed, any innovation in strategy at all, that was not at its inception motivated by information and enabled by information technology. This view of the company is echoed by Gregor Bailor, an Executive Vice President and Capital One’s CIO, who says “*I have never felt closer to the strategy formulation of any organization and I have never worked more closely with the senior management team. The work we do, in identifying and testing strategies, is absolutely fundamental to the success of the companies. Our budget for research and development is higher than that of any other consumer bank our size. And it is absolutely key to the success of this company.*”

Capital One made great efforts and expensive investments to assure that it developed an information advantage relative to its larger competitors, and it continues to act carefully in ways that preserve this advantage. When outsourcing critical operations it is careful that software development is never outsourced to the same firm that does data analysis, and that the use of software in call center operations is never outsourced to the firm that did the development. As senior officers of the firm have claimed and senior officers in business processing firms have
confirmed, Capital One’s information advantage is too critical to risk. Thus information analysis, coding, and training and operations are never entrusted to a single outside firm.

In this chapter we will identify the three features that characterize newly-vulnerable markets and that enable the shift from scale to skill, providing opportunities for small new entrants to overthrow the existing competitive balance with an information-based strategy. We will present three propositions for predicting the success of firms attacking these newly-vulnerable markets. And we will work with the experience of Capital One’s information-based strategy in several different markets, using the company as a form of naturally occurring quasi-experiment, to explore and comment on our propositions.

1b. Explanation and Defense of our Methodology

For obvious reasons, it is not possible to provide a true experiment by inducing companies to invest hundreds of millions of dollars in ventures where our propositions would predict failure, so we cannot expect to perform controlled experiments. While using the same single company, with the same strategy and the same management team, to assess experience in different markets provides some controls, clearly we have neither a statistically significant sample nor a truly controlled experiment. Thus, we do not offer our analysis of Capital One’s experience here as a scientific demonstration of our propositions; we hope that the analyses nevertheless will prove useful both to strategic planners and that our results will appear plausible, even if not fully proven, to fellow academic researchers.

There is a strong history of reasoning from case studies in the social sciences. It has been argued that case studies can be used to develop hypotheses and theories for subsequent modeling and econometric analysis [Eisenhardt(1989), Yin(1981, 1994)]. The MIS community has
likewise defended case-base reasoning as a valid research methodology [Benbasat et al. (1987), Dyer et al. (1991), Eisenhardt (1989), Galliers et al. (1994), Heinz and Myers (1999), Iacovou et al. (1995), Lee (1989a, 1989b), Lundberg et al. (2001), Numagami (1998)]. Several authors have developed theories from MIS case studies [e.g., Clemons et al. (1993) developed the Move to the Middle hypothesis in sourcing], which could then be more formally tested by others [e.g., tests in the mortgage issuance industry by Kess and Kemerer (1994) and modeling of the optimal duration of contracts and the optimal number of suppliers by Bakos and Brynjolfsson (1993)]. As another example, Han et al. (2004) used case study methods to develop models of how ownership structure of inter-organizational systems (IOS) can affect information exploitation and information technology adoption. Finally, the tradition of quasi-experiments and naturally occurring experiments [Cook and Campbell (1979)] appears ideally suited to this domain of inquiry, since for the obvious reasons mentioned above it is not feasible to engage in controlled experiments where selected companies deliberately engage in expensive attack of markets where theory predicts they will be unsuccessful so that we can determine if it is the management team, the theory, or other factors that determine success. [See Appendix 1 for a more detailed discussion of the use of quasi-experiments in academic research]

In the following section we begin with a brief introduction to Capital One and its experience in a range of industries, from their initial tremendous success in domestic U.S. credit card issuance through their initial forays into domestic travel, gifts, and auto financing, and their experience with foreign expansion.

2. Capital One Financial
2a. The Introduction of an Information-Based Strategy

Capital One’s founders, Rich Fairbank and Nigel Morris, were initially strategy consultants, not bankers. As consultants in financial services, Rich and Nigel discovered what we now call
the Great Idea — the idea that different customers had enormous differences in profitability for individual financial products, and that it should be possible to earn enormous profits by specifically targeting the most profitable accounts. This idea entailed (1) understanding the
customer profitability gradient (c.p.g.), or differences in profitability that existed across customers; (2) understanding the attributes of those customers who represent the best deciles along the c.p.g. spectrum; and (3) determining how to reach these best customers, through a combination of targeted direct marketing (push) and product design (pull).

Rich and Nigel initially sought to sell consulting services, teaching banks how to implement an information-based strategy to profit from the extreme customer profitability gradient in credit card issuance. At the time Rick and Nigel began trying to sell consulting services, the credit card industry appeared mature to many observers, since most households deemed credit-worthy already had at least one card. Virtually all credit-worthy families had more than one charge card, including bank charge cards, company credit cards, and other cards such as Amex and Discover. Pricing was relatively simple – all card issuers had a single price for all customers, such as CitiBank’s 19.8% APR, or Amex’s $85 for a Gold Card. Strategies were simple as well, and included offering rebates (Discover) or mileage points (CitiBank’s American Airlines AAdvantage Card) or other forms of loyalty programs (General Motors, American Express). Marketing efforts were limited as well. Although a few issuers, like CitiBank or AT&T Universal, used direct marketing to try to develop a national account base, almost all customers still held their primary MasterCard or Visa card with the banks that provided their checking
accounts and savings accounts. Rich and Nigel felt that with direct marketing, targeting the desirable end of the c.p.g., it would be possible to attract a large number of profitable customers and greatly increase a bank’s profits. The mechanism for attracting new accounts was simple and direct: offer profitable low-risk customers significantly lower prices.

Surprisingly, despite the opportunity they saw to attract customers who would earn as much as 100 times higher profits for the bank, relative to the average of the bank’s existing accounts, they were unable to interest any of the top 20 banks in retaining them as consultants to pursue this concept further. However, they did enter the industry as executives with Signet Bank, a top 25 credit card issuer, and within a decade took their place as the top executives of a powerful established player in the credit card industry.

2b. Initial Period of Success at Signet

When Rich and Nigel joined Signet Bank, they joined as full members of the bank, not as consultants seconded to Signet. They had banker titles and banker responsibilities, and drew banker salaries, although they did negotiate a significant incentive plan. As part of their preparation for the implementation of their information-based strategy, they took over responsibility for information systems, though neither of them had ever had line responsibility for information technology. With their seniority they were ideally positioned to serve as champions for strategic IT innovations [Beath(1991)]³. They immediately bought out the long-term contract between EDS and the bank, with Nigel Morris arguing that information services represented the bank’s central nervous system, and that “you could no more outsource information services than you could outsource your higher brain functions.” Credit scoring
models were developed internally, rather than relying upon black box models such as the Fair Isaac and Company (FICO) scoring model, provided by service bureaus [see Appendix 2 for definitions of credit-card industry terms used in this chapter]. Customer contact, indeed, all data processing functions, were brought in-house.

If the Great Idea was based on the existence of enormous differences between average accounts and great accounts in credit card issuance, the first step in translating this into a business strategy was identifying the best, the worst, and the average accounts. In the card issuance business, competition has largely eliminated annual fees, so the principal source of an issuer’s revenues and profits is finance charges, the monthly fees paid by card holders who do not pay off the outstanding balances during the monthly grace period. A customer who maintains and revolves high monthly balances, paying finance charges while never missing a monthly payment, is ideal; indeed, the best 20% of these customers account for more than 125% of issuers’ profits (while the worst 20% of customers account for substantial losses). The most profitable decile of a bank’s customers, with revolving balances of several thousand dollars, was producing revenues in excess of a thousand dollars. These highly profitable customers can be considered love ‘ems. A customer who goes into bankruptcy and defaults clearly represents a significant loss for the bank; less obviously dangerous, but in aggregate almost as bad, are the customers who use the card for convenience, incur only low balances each month, and pay them off in full. These customers, low volume transactors, never incur finance charges, and for the issuer serving them represents little more than supporting a collection of perpetual, zero-interest loans with monthly mailings. Clearly, these are expensive customers to maintain, and can be

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3 We do not believe that a champion is sufficient for an innovation or a system to succeed; it is also necessary that the idea or the innovation be a good one. However, it is also true that a good innovation or system will not succeed without a sufficiently senior champion.
termed them *kill yous*; the worst 20% of an issuer’s customer portfolio represents a loss, often equivalent to 25% of total profits or worse. Even when controlling risk and reducing charge offs due to bad loan losses, a bank’s profitability is affected by the number of low risk loss-producing transactors it carries. As Nigel Morris has observed, “*Any fool can lend money. The trick is finding someone who will pay you back ... slowly!*” The information-based strategy developed by Rich and Nigel was intended to do precisely this.

In an attempt to learn the attributes of customers who represented love ‘em accounts, the products that were profitable, and in particular the products that were attractive to the best accounts, Signet adopted a strategy of *test and learn*, systematic testing to determine what worked and for which accounts. The bank initiated hundreds, then thousands of tests. Products were designed and then were offered to a range of market segments, targeting and classifying customers based upon a wide range of data available from public credit and census databases. By choosing a range of interest rates and a range of customer segments, each test could have dozens, or even hundreds of sub-tests, which could then be tracked over time for customer acceptance, customer usage, the lifetime NPV of finance charge earnings, and charge offs (bad loan losses).

The first great success profoundly altered both profitability and the philosophy of Signet’s credit card operations. Signet pioneered the *balance transfer product* in 1991. Customers were offered a significantly lower APR on balances brought in from competitors. At a time when CitiBank and most other competitors were offering all customers 19.8%, Signet offered considerably lower rates, sometimes as low as 9.8%, on balances transferred over. Initial test results were phenomenal. As Nigel Morris noted, “*We hit the sweet spot.*” Customers who

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4 FICO scoring models, such as their Equifax, are in use in more than 75% of all financial institutions. Rick and Nigel realized that you could not gain an advantage using the same technology as your competitors.
transferred their balances from existing accounts at competitor banks maintained high balances, paid them off slowly, and provided a constant stream of finance charges. As Figure 1 illustrates, other tests had a scatter plot, with the likelihood of charge off (bad loan losses) increasing slightly with customers whose balances came closer to their account limits. The balance transfer product had low charge-offs, consistently high utilization, and consistently high earnings from finance charges. Rich and Nigel had proven their point to Signet management; there was a customer profitability gradient, and it was possible to tap into it, focusing on serving profitable customers.

We Have Found the Elusive Low-Risk Revolver

Solicitation Results (1 year after booking)

Figure 1. Scatter-plot of test results showing, for each test, the average customer loan delinquency plotted against the average credit line utilization. Customers who borrow more tend to be more risky, as evidenced by the dark squares representing results from test solicitations before discovering the “sweet spot.” The sweet spot is the low risk revolver, the accounts low on the graph and along the far right of the axis, represented by unshaded squares.
Even in the earliest days of the implementation of the test and learn information-based strategy, results were dramatic. Growth exceeded that of most competitors, as shown in Figure 2 below. Moreover, test and learn strategies enabled Capital One to grow faster while maintaining charge-off rates that were lower than the industry average, as shown in Figure 3.

**Since 1992, Capital One’s Growth Has Outstripped Most Competitors**

*Loan Growth 1992-1995*

![Bar chart showing loan growth for various credit card issuers with Capital One leading at over 500% growth, followed by Advanta and MBNA. The industry average is 73%.*](image)

*Figure 2.* Growth of major credit card issuers in the early years of test and learn information based strategy at Capital One.
Figure 3. Capital One’s early periods of high growth were achieved while maintaining charge-off rates that were among the lowest in the industry.

This combination of sustained growth in receivables, successful targeting of extremely profitable high balance low risk revolvers, and low charge-offs earned Capital One the honor of being named *Credit Card Management*’s “Issuer of the Year” for 1995 [Lucas(1995)]. Capital One enjoyed over a year in which competitors took no action in response to the attack that was drawing away their most profitable customers. It was 18 months before other banks replicated the balance transfer product, and even longer before competitors began to experiment with differential pricing.

It is worthwhile here to say something about why charging 9.8% instead of 19.8% can represent an enormous source of profits, rather than just transforming the bank into a low-price competitor. While operating as a low-price competitor might be a successful strategy for CitiBank or Bank of America, with lower costs of funds through their huge branch networks and lower operating expenses as a result of massive scale, it would have been disastrous for Signet. Signet had to fund its outstanding card balances, it lacked scale in its data processing operations, and it was funding huge exploratory test and learn operations, which produced consistent albeit
manageable losses. When CitiBank or Bank of America charged all credit card customers 19.8% they were in fact providing massive subsidies from their high-profitability love ‘ems to their low-profitability kill yous. This cross subsidy was the equivalent of over-charging their best accounts by several hundred basis points on their cost of credit (APR). When Capital One attracted only love ‘ems, it had no portfolio of unprofitable accounts to subsidize. Consequently, without needing to transfer a significant portion of their finance charge earnings from their best accounts to their worst accounts, Signet could be profitable with lower APRs for their good accounts, even after paying for funds and paying for their sub-scale high cost data processing operations. CitiBank’s average earnings, over all deciles of their accounts was about $12-$15 at the time; Signet’s average earnings per accounts were significantly higher because their account portfolio corresponded to the best two or three deciles in CitiBank’s portfolio.

In some sense, the balance transfer product was less a matter of test-and-learn than simply look-and-know. That is, it is obvious that the bank wants to attract revolvers, customers who pay their accounts off slowly and pay finance charges each month. Likewise, it is obvious that the customers who would be most interested in lowering their monthly finance charges would be those customers who actually pay finance charges, or precisely the ones that Signet wanted to attract. Thus, we have informed self-selection, even in the presence of information asymmetry. So it is not necessary that Signet know which customers will represent revolvers; it is merely necessary that Signet identify which customers will represent good credit risks and then offer all of them a product that will appeal only to profitable revolvers. This is the earliest example of

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5 The concept of informed self-selection in the presence of information asymmetry is well-established in economics [Akerlof(1970)]. It was recognized in the 2001 Nobel Prize in Economics. There are numerous papers showing how products can be designed to attract profitable customers, discourage unprofitable customers, or route customers to products designed specifically for them, even in the presence of considerable information asymmetry; this is the concept of screening mechanisms. There are numerous references to this concept in insurance [Miyasaki(1977), Riley(1979), Rothschild and Stiglitz(1976), Wilson(1977)] and securities trading [Clemons and Weber (1996, 1997)], as companies attempt to discourage customers who will produce big losses. However, we have found no
product design to exploit customer profitability differences that we have been able to locate in retail banking, and by combining informed self-selection aligned with product design incentives, it is quite possibly the most ground-breaking example of an information-based strategy (IBS) that is used in commercial practice. As noted by Moshe Orenbuch, a well-respected industry analyst, “Their information-based strategy has given Capital One more profitable accounts than their competitors. This is true in every segment of the market. For example, their super-prime loss rate is better than at AmEx.”

2c. Later, Sustained Success at Capital One

In 1994, after six successful years of credit card operations at Signet, the decision was reached to spin off the credit card division that Rich and Nigel had built. The credit card portfolio had grown, from 1 million accounts to nearly 5 million, and from $1 billion in outstandings to almost $7.5 billion. It had reached the point where credit card operations at Signet had become too large to fit comfortably into the rest of the bank, and in order to maximize the freedom of the division, and thus to maximize shareholder wealth, the decision was reached to create a new mono-line credit card issuer\(^6\). The IPO was held on November 16, 1994. Capital One’s success was dramatic, as Figures 4 – 9 illustrate.

\(^6\) A mono-line credit card issuer is a bank that offers credit cards but no other products or services.
Figure 4. Increase in outstandings (managed loans).

Figure 5. Increase in number of accounts.
Figure 6. Return on equity.

Figure 7. Increase in earnings per share.
**Industry Outstandings Q2 05**

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<th>Q1</th>
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Source: Company Reports/ Visa and MasterCard

**Figure 8.** Ranking on size of outstandings portfolio, compared to competitors.

**Loss Resiliency Index Q2 2005**

![Loss Resiliency Index Q2 2005](image)

**Figure 9.** Rankings by loss resiliency index. The loss resiliency index represents revenue margin divided by the charge-off rate, or earnings per dollar outstandings divided by charge-off losses per dollar outstandings. It is a measure of how much a bank’s charge-off rate can increase before the bank is no longer earning profits.
2d. Increasing Competitive Pressure in the Core Credit Card Business

Eventually, of course, competitors did begin to replicate Capital One’s strategy. Capital One continued to innovate and to improve both its targeting and its pricing strategies. When competitors had dozens of different pricing segments, Capital One had hundreds, and when competitors had hundreds, Capital One had thousands. Even though Capital One has remained out ahead of competitors, competitive pressures and the move from dozens of prices to thousands inexorably reduced the average earning from each account relative to what it would otherwise have been. In brief, there is now less room for error; since the profits you earn from your good customers are reduced by competitive pressure, you are less able to subsidize the kill yous of any type. Capital One took a number of defensive actions in order to retain profitability.

(1) **Dynamic repricing of customers’ accounts to reflect changes in their profitability:** As customers become less profitable due to reduced finance charges Capital One might impose annual fees. More importantly, Capital One constantly reprices based on risk. As accounts began to appear more risky, APR might be increased and credit limits might be reduced. In particular, accounts were closely monitored, allowing Capital One to anticipate any shift from slow-pay status (good) to no-pay status (bad!) and to take defensive action to reduce or

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We can explain the reduction in profits simply in terms of moving towards efficient pricing and offering each customer an interest rate that comes closer to his risk adjusted rate of return, or break-even rate. If all customers are offered 19.8% by Citi, there may be a wide range of interest rates that will attract the customer and still provide profits for Capital One. When a customer is offered one of 25 rates by Citi, somewhere between 9.8% and 19.8%, then Capital One has less room in which to find a rate that is both attractive to the customer and to Capital One. As the number of price points increases, and as Citi and competitors come closer to precision pricing for each account, this range decreases for each customer. To make this more clear, when Citi offered a customer 19.8% when the customer should have been offered 8%, then Capital One can offer this customer 12% at a substantial profit. When Citi offered customers a few different rates and offered this customer a rate of 10%, the opportunity for Capital One is substantially smaller.
to eliminate losses\(^8\). Capital One’s lower interest rates for revolver accounts attract a higher percentage of customers who cannot afford to pay off their accounts in full each month. These accounts, of course, may be more vulnerable than an average sample of all accounts across all demographic groups, and thus Capital One monitors to determine when an unanticipated event could transform these customers from desirable *slow-pays* to deadly *no-pays*.

(2) **Retention specialists:** Retention specialists were added, whose job was to respond to customers who were about to terminate their Capital One accounts or who had reduced their use of their Capital One cards. These retention specialists had real-time screens that allowed them to determine the break-even APR for each customer, and the training to speak with customers and determine an APR that would retain or restore the customer’s activity without sacrificing too much of Capital One’s future profits. Indeed, the incentives for retention specialists were designed to assure that customers were retained by giving them best-in-class pricing at a rate that was still profitable for Capital One, since the specialists compensation was directly tied to the spread between each customer’s break-even APR and the rate that was negotiated for that customer. Capital One also has expertise to determine which customers represented losses and to implement *termination specialists*, who could coach unprofitable accounts into leaving the bank. While not resorting to actions that might be

\(^8\) We note that it is easy to develop products that appeal more to revolvers than to transactors; a balance transfer product offering lower fees for balances that are transferred over from another account is clearly a simple example of such a product; as soon as the balance is paid off, the transfer is rendered without value, so clearly this activity is attractive only to customers who expect to retain outstanding balances and thus to pay finance charges. Unfortunately, it does not appear to be possible to develop a product that is attractive only to low-risk borrowers, requiring more active risk management on the part of the Bank.
seen as quite this offensive, Capital One has imposed annual fees on low profitability accounts, which either increases their profitability or induces them to leave the bank.

(3) Ever-more sophisticated tests were performed to help assess the changing risk profile of each customer.

(4) Actions were taken to limit charge offs, and to collect as much as possible from delinquent accounts that other banks might have written off entirely.

Scott Barton, the president of a newly-restructured Fraud Control operation within Capital One, explains simply, “In an efficient market, where you give every customer the best possible price, you cannot overcharge anyone. Of course, if you cannot overcharge, it is difficult to recover from losses incurred by undercharging. We need to avoid the customers who deliberately run up charges for which they have no intention of paying us and merchants who willingly participate in fraudulent transactions.” Likewise, in an environment of efficient pricing, Capital One needs to avoid losses due to customers whose accounts have gone delinquent, and Capital One maintains a large operation in Boise, Idaho that seeks to limit losses caused by these accounts. Capital One has one of the largest non-military relational databases, now estimated to be 150 terabytes in size. Likewise, Capital One officers joke that the bank employs more Ph.D. statisticians than all other credit card issuers combined, allowing the constant analysis of accounts for patterns in activity that will predict changes in risk or profitability. The database, the statisticians, and the reliance upon test and learn are all aimed at using information to preserve profitability even in an era of increased competition.
Many interesting examples have emerged where the bank has observed that changes in customer behavior are statistically-reliable leading indicators of changes in customers’ risk and preferences. For example,

- A sudden surge in an individual’s use of ATMs in Atlantic City or Las Vegas may be easy to understand
- An application for a credit card over the internet may suggest a financial crisis for the applicant or a higher likelihood of fraud
- An increase in automobile repair bills suggests a good time to cross sell a new car loan

A significant fraction of Capital One’s profits have been plowed back into marketing, customer acquisition, and direct mail marketing efforts, as shown in Figure 10 below. Even as Capital One’s initial tests and products succeeded, the firm continued to use IT for the design of new product offerings, for targeting and for continuing test and learn activities. Moreover, while Capital One did not take explicit actions to bring its costs in line with the dominant players in the industry, this did indeed occur automatically. As Capital One grew from a top 25 card issuer to a top 5 issuer, its per transaction and per account processing costs dropped from among the highest in this scale-intensive industry to among the lowest. As noted by George Overholser, a senior executive who was an early addition to the Capital One management team, “Our scale now gives us a significant advantage as a low-cost processor of card holder transactions.”
While Rich and Nigel had real concerns for sustainability of their credit card profits after the first two or three years, these concerns are now less intense as IT has led to a cost advantage that would be impossible for new entrants to replicate. As Scott Barton notes, “our combined operating expense and IT expense per account is now among the lowest in the industry, probably better than anyone but CitiBank. Our expertise database expense per account is probably much higher, but the revenue produced by this database is wonderful. We are so much bigger than any new entrant; no new attacker could afford to do to us what we did to our competitors.” Nigel Morris expresses this more tersely, saying, “having cut $20 annual expense out of processing each account over the past couple of years, with no loss in quality, it sure feels good to enjoy a scale advantage after staring up at the Goliaths for so long.” Moreover, the major issuers have developed diverse strategies, and they may not wish to replicate Capital One’s strategy. MBNA has been far more focused on affinity cards, for example, while Citi has continued its focus on national scale to maintain their position as the industry cost leader.
3. Theoretical Explanation for Capital One’s Success

3a. The Theory of Newly-vulnerable Markets

We present Capital One’s success as an instance of using an information-based strategy to attack a newly-vulnerable market. The information-based strategy is merely a very effective mechanism for exploiting an opportunity, but an IBS cannot succeed against entrenched incumbents without the existence of an opportunity. The theory of newly-vulnerable markets identifies these opportunities. There are three features that characterize newly-vulnerable markets and that, collectively, constitute the source of the attacker’s advantage [Clemons(1997)]:

(1) **Newly-easy to enter**: An industry can become newly-easy to enter due to regulatory change that permits new entrants, changes in technology that reduce the cost of entering or reduce the minimum scale needed to compete, changes in distribution systems that likewise reduce barriers to entry or reduce minimum scale needed, or changes in customer preferences that reduce the existing advantages of incumbents. We stress the importance of newly-easy to enter; an industry that has not undergone a recent change in ease of entry is unlikely to represent an attractive target, since if it were indeed attractive some firm should have noted this and exploited the opportunity earlier.

(2) **Attractive to attack**: While a market would be attractive to attack if all existing participants were earning excess profits, this is rare. More common is a situation in which profits are modest, but pronounced differences exist in the profitability of individual accounts. Throughout this case we use the terminology of Capital One, and call this a **strong customer**
**profitability gradient.** Such differences in customer profitability occur when there are great differences among customers, in their cost to serve, for example, or in the revenues that they generate, but these differences are not reflected in prices that individual customers are charged. These simplistic pricing schemes may be a result of a history of regulation, as in telephony, or they may result from a long history of operations when the cost of analyzing individual customers was prohibitively high or the data needed to do so were not yet available. Such differences in profitability across customers make it easy for a new entrant to become profitable quickly by targeting only the best potential accounts, and can enable a new entrant to become profitable even in the presence of disadvantages from lower scale or other forms of higher costs. Indeed, targeting allowed the Bank to achieve the best profitability of card operations within the industry, with ROA 250% of the industry average.

(3) **Difficult to defend:** Finally, there must be some barrier that prevents the incumbents from immediately replicating their attacker’s strategy, or there is no opportunity for an attacker to profit from market entry. If incumbents replicate the attackers’ strategy and eliminate customer profitability differences, for example, this leads to more efficient markets and it would indeed be what economists predict, but it provides at best limited return on the attacker’s investment. There must be something that prevents immediate replication. Contracts with existing customers prevent rapid change in insurance, while statutory limitations on actions permitted to incumbents during a transition period after deregulation in telecommunications provide market opportunities for new communications firms. In other industries such as banking, organizational structure and cultural limitations have limited incumbents’ ability to defend themselves.
These conditions, and the resulting advantage of new entrants, have been observed in a wide range of industries that we have studied (insurance, telecommunications, securities broking, banking, credit card issuance), in the U.S., Canada, the U.K., continental Europe, and Hong Kong.

3b. Capital One’s Success in Credit Card Issuance

Let us examine how the theory of newly-vulnerable markets might be applied to the analysis of Capital One’s success as a credit card issuer. In particular, let us see how well the three individual factors that characterize a newly-vulnerable market — newly-easy to enter, attractive to attack, and difficult to defend — might apply.

Newly-easy to enter: Some aspects of credit card issuance have always made it easy to enter; the MasterCard and Visa franchises allow any bank to issue cards that customers know will be accepted anywhere, no matter how small the bank; likewise, merchants know that charges will be honored, no matter how far away the issuing bank might be located. Other trends were more recent at the time of Capital One’s entry, and can indeed be considered to have made the industry newly-easy to enter. First was a massive national ad campaign undertaken by CitiBank in support of its first direct marketing campaign, seeking to get a significant scale advantage by becoming the first truly national credit card issuer. Prior to this campaign virtually all credit card customers obtained their cards from a local bank, where they already had checking or savings accounts. While only a national player such as Citi could have afforded a campaign to change customers’ perception of where they could obtain a credit card, Capital One was a lucky
beneficiary of this change. Second was the advent of securitization, which allowed banks to get mortgages and credit card receivables off their books by turning them into a form of fixed income investment; this enabled mono-line issuers like Capital One, which had no branches and no deposits, to fund their credit card receivables. Finally, a sharp reduction in data processing expense made it feasible to use IT to segment the market and to analyze potential new customers, which made it possible to launch highly focused direct marketing campaigns.

**Attractive to attack:** As we have described already, the simplistic pricing mechanisms used by all major card issuers at the time created a strong customer profitability gradient, which made the market attractive to attack.

**Difficult to defend:** The initial attacks of Capital One and Signet Bank did not draw an immediate response from the banks that were being targeted. This lack of response had several causes. One was simply the fact that competitors did not see themselves as under attack, and did not understand the transition from scale-based strategies to skill-based strategies. A competitor's senior vice president of marketing strategy, when he first noticed that he had lost several thousand accounts to Signet the previous month, considered it a statistical fluke and concluded calmly that it was not a problem because he had several million more accounts. Only when further analysis showed that these were maxed out revolvers, low-risk customers who carried large balances and paid high finances charges, did he begin to become concerned. Slightly more astute competitors might have seen the attack as the start of a price war and have concluded that

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9 Traditional banks offer a wide range of products. Deposits taken in through branches represent money lent to the bank by depositors; the bank uses these deposits to fund loans to borrowers, whether as short term loans, as mortgages, or as credit card receivables. Mono-lines like Capital One and MBNA America do not have branches,
Signet did not have the staying power to continue the attack. A second reason for the lack of response was the structure of other banks; while the marketing departments might be concerned at the loss of several thousand accounts, these marketing departments did not, on their own, have the ability to renegotiate rates for individual account holders, nor did they have control over the data processing resources that would have been required to do so. Credit management departments might have been able to authorize selective rate reductions but failed to see how this would help; the idea of reducing the APR of any accounts, in order to increase profits, seemed quite absurd. Again, even if credit departments had wanted to reduce the APR of large balance revolvers in order to forestall their opportunistic pick-off by Capital One, credit officers, likewise, did not have control over the data processing resources that would have been necessary to do so. Finally, in some sense responding early may not have been a good strategy for any incumbent bank; reducing the APR of large revolvers would have reduced a bank’s profits since most banks could not simply raise the rates of transactors to off set their reduction in earnings from lower APRs charged to revolvers [see Clemons and Gu(2003) for more details]. As Scott Barton describes it, competitors’ reluctance to implement differential pricing on a broad scale “simply reduced our ability to attract new customers from fantastic to good.” Even today, not all credit card issuers are convinced that Capital One truly represents a viable competitor with a valid strategy. As Moshe Orenbuch, a well-known industry analyst notes, “Competitors simply do not believe that someone else could be that much better or could know that much more than they do about their industry. When I addressed a major credit card issuer last year, one of the
first questions I was asked was ‘When would Capital One blow up.’ They asked, when, not if!”

In aggregate, these factors greatly reduced competitors’ ability to respond.10

4. On Beyond Domestic Credit Card Operations

Section 3 used the theory of newly-vulnerable markets to explain Capital One’s success in domestic credit card issuance. Section 4 describes several activities through which Capital One attempted to expand outside domestic credit card operations, and uses the theory of newly-vulnerable markets to explain successes.

4a. Natural Line Extensions — Geographic Expansion

Capital One’s first expansion beyond domestic U.S. credit card operations was geographic expansion into Canada and the U.K.. While both markets appear similar to the U.S., there were significant differences as well. Both markets speak English, and both are relatively mature, with a large percentage of credit-worthy households already possessing one or more bank charge cards. Both markets have strong MasterCard and Visa franchises, which Capital One and other new entrants can use to provide an immediately recognized and legitimate brand for entry. But both have strong oligopolies, with a small number of banks enjoying enormous economies of scale in advertising and operations.

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10 The theory of contestable markets [Baumol(1982), Baumol(1986), Baumol et al.(1988)] clearly guided our development of newly-vulnerable markets. Contestable markets are those that can be entered and exited costlessly, preventing abuse of monopoly market positions; regulators can take the presence of cross subsidies as proof both that a market is not contestable and that the incumbent is exploiting monopoly power to overcharge customers in the markets in which it is earning enough to fund subsidies elsewhere. Newly-vulnerable markets are markets that in some sense have become newly-contestable, in part because they have become newly-easy to enter. We are concerned with cross subsidies, not as indicators of abuse that should interest regulators, but as indicators of a customer profitability gradient that encourages attack. If, in addition, incumbent firms are unable to defend themselves, then these markets are not only newly contestable, they are indeed newly-vulnerable to attack.
Capital One’s success in both markets has been striking. Growth in the U.K. has been rapid, showing great increases in absolute terms (increase in the number of new accounts, increase in the total value of balances outstanding) than any U.K. issuer. Capital One’s experience in Canada was very similar to that of the United States. Indeed, the same analysis of factors that made the U.S. market newly-easy to enter, attractive to attack, and difficult to defend can be directly applied to Capital One’s experience in Canada.

There were some differences between the U.S. and U.K. markets that justify additional analysis.

**Newly-easy to enter:** Perhaps the most important factor that affected entry in the U.K. but not the U.S. was regulatory change. Retail banking markets in Europe were largely national until regulatory change in preparation for launching of the EU made financial services more international. This made it easier for large American banks to enter, but mass market success had to wait until banks with targeting strategies like Capital One began their attack.

**Attractive to attack:** Major U.S. banks employed uniform pricing strategies that made them attractive to attack because the best credit card customers were subsidizing the worst; this allowed Capital One to undercut competitors by as much as 900 basis points. In the U.K. the major banks saw their credit card operations as cash cows that could be used to subsidize not only unprofitable accounts but also entire unprofitable lines of business, such as free checking for all consumers. U.K. banking customers paid interest rates as high as 24.9% on credit card balances. This double subsidy allowed mono-lines, banks without unprofitable businesses like
checking, to offer good credit card customers rates that were as much as 1800 basis points less than their current banks were charging them.

**Difficult to defend:** All of the factors that made it difficult for U.S. banks to defend themselves applied in the U.K. as well. Additionally, there was a degree of smug arrogance among U.K. bankers, reflected in public statements in the press and private conversations with researchers and with Capital One officers. In hindsight, the warnings that Nigel heard in London, such as “No U.K. banking customer is going to change his High Street banker for a mere 1,800 basis points,” or “U.K. customers change their wives more frequently than they change their banks,” now seem not only overly optimistic but quite absurd. Combined international growth has been rapid. (see Figure 11 below)

<table>
<thead>
<tr>
<th>Capital One Financial</th>
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<tr>
<td>Managed International Operations — Outstandings (US$)</td>
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<tr>
<td>1998</td>
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<tr>
<td><strong>Total International</strong></td>
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**Figure 11.** International outstandings.

Despite initially high expectations for France and Germany, Capital One’s planned expansion into these markets has been less successful. Indeed, it has had to be delayed. Initially, the hope was that France would be wide open to attack, since French customers did not use credit cards extensively, relying instead on revolving store accounts. Customer behavior in
both markets proved much more difficult to change. Germany was quickly dropped from consideration, but initial investments were made in France, where consumer adoption has not yet been high enough to justify Capital One’s expenditures.

Capital One expected that India would be easy to attack as well, albeit for different reasons. India had a newly-emerging middle class and almost no domestic penetration of credit card usage; large numbers of newly-liquid families could be expected to adopt western lifestyles, along with western-style charging for purchases and travel. However, Capital One has deferred entry into India, although discussions are still under way. Although these three markets might appear easy to enter, in fact they were not. To enable a foreign bank to compete in credit card operations requires a local banking partner, and finding an appropriate partner has been problematic in all three countries. However, Capital One believes that an information-based strategy is exportable, and that credit cards remain a *killer app* product for their international expansion.

4b. Successful Line Extensions — Auto Financing

Capital One has been successful in its expansion outside consumer credit cards and into some related consumer financial services such as auto finance. It entered this market in two segments; one was sub-prime, providing financing for customers who might otherwise have difficulty obtaining a car loan, and the other was super-prime, providing financing for customers with lower-than-average risks.

The operation of the *sub-prime* business was initiated by the acquisition of Summit Acceptance Corp in 1998. Capital One has extensive credit data on its existing customers, including records of existing automobile loans and information that enables them to predict
when these customers will be ready to purchase another car. Part of their strategy for this segment was to notify customers that they were pre-approved for car loans for new and used automobiles at specific dealerships near their homes. A second, complementary portion of the strategy was to work with local dealers; customers would be directed to dealers who promised to work with Capital One, to send them “good paper,” to treat customers well, and to help to build the franchise. Dealers also paid Capital One’s direct mail costs associated with the auto finance business. Dealers were assured that customers would indeed be able to buy cars at the end of the sales process. Customers were assured that they “would feel like buyers, not borrowers.” Both dealers and customers were pleased.

The operation of the super-prime business is very different. This is based less on cross-selling to existing Capital One card holders, and more on some observations that Capital One has made on the relative riskiness of different classes of automobile purchases. For reasons that remain unclear in an academic sense, customers who spend a considerable amount of time studying automobile purchases online tend to have much lower loan risk than average purchasers of the same automobile, even when controlling for income and other demographic factors. Combining this observation with careful analysis of applicant demographics and credit history allows Capital One’s super-prime lending arm, PeopleFirst (now Capital One Auto Finance), to make very safe loans at very attractive rates.

In a highly fragmented industry, Capital One is now the largest independent provider of auto financing (that is, other than GMAC and finance operations owned by an automobile manufacturer). As shown in Figure 12, its share of the market has grown steadily, as has its ranking on size and on earnings. As Dave Lawson, the head of Capital One’s auto finance division, notes, “Among the key reasons we entered the business is that the auto finance industry
is the second largest type of consumer lending behind mortgage financing. Additionally, the business was and still remains highly fragmented. From a credit risk and direct marketing perspective the industry was clearly unsophisticated; there were differences in customer profitability we could work with. The consumer viewed the auto finance experience at the dealership as something worse than major surgery. This unacceptable consumer experience opened the door for the development of the direct market auto lending operation. We reinvented the consumer auto finance experience.” Scott Barton describes the situation more colorfully: “Used car customers were being humiliated, so they really were open to another form of auto finance. And they were getting hosed; there are no major programs from manufacturers to finance used car purchases, and the funding that dealers arranged was often at horrendous rates, like 15.9% or higher. It goes without saying that the used car market is not made up entirely of customers who are thieves, or sub-sub-prime borrowers. There was a great customer profitability gradient waiting for us.”
Figure 12. Growth in Capital One’s Auto Finance Loan Portfolio.

The sub-prime auto lending market became easy to enter as a result of Capital One’s ability to identify customers who are both credit-worthy and ready to buy. To the extent that there is a customer profitability gradient it is due to risk, and as a lender with prior experience with each car buyer Capital One has an advantage in assessing this risk. Finally, by enlisting the dealer as an ally rather than merely as an agent, Capital One has reduced the automobile manufacturers’ ability to defend their loan origination business. The super-prime auto lending market became easy to enter when Capital One learned about the various relationships between online search, car attributes, and the riskiness of each loan and forged cooperative online marketing arrangements. It became attractive to attack simply by virtue of Capital One’s ability to target only the least risky loans, and to price super-prime loans appropriately. And the market is difficult for established lenders, principally banks, to defend, both because they do not have
access to the buyers’ online search history, and, secondarily, because they do not yet even realize that they are under attack. The success of Capital One’s auto financing business is shown in Figure 12 above.

4c. Unsuccessful and Less Successful Line Extensions

Capital One initially considered entering new financial services industries, as either a mortgage issuer or as an insurance carrier, and decided against entering either. The mortgage industry does not appear to have experienced a recent change that has made it easy to enter. The industry does not exhibit a strong customer profitability gradient, since interest rates are largely dictated by Fannie Mae and Freddie Mac, and since securitization and resale of mortgages assures that processing costs and default risk over the lifetime of the mortgage are not borne by the issuer. That is, mortgage issuance does not exhibit a strong customer profitability gradient. Insurance underwriting certainly has a strong customer profitability gradient — some customers are more expensive to serve, have more automobile accidents, or get sick more frequently than others — but insurance does not appear to be newly-easy to enter for three main reasons:

(1) Large samples: Insurance claims are infrequent, and thus a large sample is required before a meaningful test can be run. Moreover, once it is discovered that some prices are simply wrong, it may not be legally permissible to terminate these policies. That is, if mistakes are made, they are numerous.

(2) Slow learning: Insurance claims are infrequent, and the test must be run for several years before meaningful learning is complete.
(3) **Regulation**: Many of the tests that Capital One might wish to run are prohibited by regulation. In brief, the lag time between *testing* (underwriting the policy) and *learning* (realizing the revenue stream from premium payments and the expense stream from claims) may be years, rendering Capital One’s strategy in credit cards inapplicable here. Regulation remains complex, and will affect each individual state and the District of Columbia differently. As importantly, it would **not** be difficult for incumbent insurance companies to defend themselves against Capital One’s attack, since the pricing algorithm that Capital One would use would have to be disclosed to each regulatory authority and would quickly become a matter of public record, available to all competitors.

Likewise, Capital One studied entering unrelated industries, as a *retailer* of gifts and flowers or as a *travel agency* and once again decided against entering either. While online websites are easier to establish than physical store fronts and some online retailers have had at least moderate success, Capital One executives did not find a strong customer profitability gradient that would enable attack by a small player. Travel, on the other hand, does exhibit a strong customer profitability gradient, but does not appear to be newly-easy to enter. Although they are under constant pressure, some of the largest corporate travel agents appear to be profitable, but their business requires enormous scale to justify their investments in systems and to enable them to negotiate attractive rates with airlines and hotels. Traditional retail travel agencies are largely unprofitable due to competition from online websites. The remaining play for leisure agencies seems to be arranging high-end packaged tours, buying airline seats, hotel rooms, and space on luxury cruise lines at preferred rates and packaging them together. Scale is required here, too, to
assure that bulk buying of rooms and transportation for packaged tours is likely to result in sales rather than expensive unsold inventory.

Capital One did initially enter various markets for telecommunications services. Capital One executives were among the first to determine that cell phones were commodities that could be sold through direct marketing channels, like credit cards, and they rapidly became the nation’s largest retailers of cell phones. Likewise, they determined that since consumers now understood cell phone service, with the glut of bandwidth cell phone service had also become a commodity, and Capital One quickly become the nation’s independent largest reseller of cell phone airtime. That is, they determined that with simple technology and excess capacity, it was no longer necessary to own a network in order to offer cell phone service and thus the industry had become newly-easy to enter. Moreover, they determined that, based on expected usage, there was a strong customer profitability gradient. Finally, given that competitors had fixed costs of building, maintaining, and operating networks, Capital One believed the costs of competitors would provide a floor below which they could not price, and thus would allow Capital One to earn profits that competitors could not compete away. Initially, Capital One was profitable in their cell phone business and executives enthusiastically explained, “With a credit card you buy funds at wholesale and sell them at retail; with a cell phone you buy bandwidth minutes at wholesale and resell them at retail. A cell phone is just a credit card with an antenna.” Over time, however, industry prices dropped as financial analysts began to value wireless companies solely in terms of the number of customers they had, and as companies began to attract customers with unprofitable pricing plans simply to drive up their stock prices. The customer profitability gradient shifted sidewise; no longer were some customers extremely profitable while others were unprofitable, but rather now some customers were extremely unprofitable
while others were worse. Discouraged executives noted that you could not be more profitable than your most desperate competitor, who was seeking to ride the telecom bubble by over investing and then pricing below cost. Capital One exited the industry.

5. Propositions for Newly-Vulnerable Markets

We offer the following propositions\textsuperscript{11} to explain or predict the success of attackers in newly-vulnerable markets.

**Proposition 1 (Newly-vulnerable markets)**
The three conditions listed above (newly-easy to enter, attractive to attack, difficult to defend) do indeed create a newly-vulnerable market, weakening the scale-based advantages of incumbents and thus creating an opportunity for a new entrant to succeed as high cost, low price, and profitable attackers following an information-based strategy.

**Proposition 2 (End of vulnerability)**
Newly-vulnerable markets become less attractive after the first round of successful attack as the attacker’s strategy results in more efficient pricing and reduces the opportunities for a successive wave of new entrants to exploit extreme differences in customer profitability through an information-based strategy.

**Proposition 3 (Successful attackers become secure members of the industry)**
Successful attackers of newly-vulnerable markets gain resource advantages that make their success sustainable. Both principal advantages are related to information or information technology:

1. Scale allows the now-established previous new entrants to pursue statistically significant test-and-learn refinements to their initial information-based strategies at acceptable cost and with acceptable risk

2. Scale allows the successful and now-established previous new entrant to operate its information technology infrastructure at costs that the next round of new entrants find too difficult to overcome, even when the newer attackers are replicating the proven strategies of the first round of new entrant.

\textsuperscript{11} Classically, the term hypothesis is used to refer to a proposition that has not been proved, but that remains subject to verification. In more recent scientific literature a hypothesis is used in a more limited sense, as an unproven supposition that can be evaluated, using statistical methods, and that can or cannot be rejected with a predetermined level of statistical certainty. We will acknowledge the difficulty of using currently available statistical measures to assess these hypotheses, and thus will call them propositions rather than hypotheses.
5a. Proposition 1 and Newly-vulnerable Markets

In this section we will examine each of the Capital One business units described above, consider whether the unit can be considered successful, and if so whether its success can be explained in terms of the theory of newly-vulnerable markets. We use a table to summarize our results and then discuss this table briefly.

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>NVM</th>
<th>Successful</th>
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<tbody>
<tr>
<td>Domestic Credit Card</td>
<td>NVM</td>
<td>Successful</td>
</tr>
<tr>
<td>Credit Card in Canada and the UK</td>
<td>NVM</td>
<td>Successful</td>
</tr>
<tr>
<td>Credit Card in France and Germany</td>
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<td>Unsuccessful</td>
</tr>
<tr>
<td>Auto Finance</td>
<td>NVM</td>
<td>Successful</td>
</tr>
<tr>
<td>Mortgage</td>
<td>N EE, N AA</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Retailing Gifts and Personal items</td>
<td>N AA</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Travel and Tourism</td>
<td>N EE</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Insurance</td>
<td>N EE, N DD</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>N AA</td>
<td>Unsuccessful</td>
</tr>
</tbody>
</table>

Table 1. Summary of observations on market conditions and the success of Capital One’s information-based strategy in a range of industries. “NVM” indicates that the market was newly-vulnerable as described earlier in the paper. “N EE” indicates that the market was not newly-easy to enter. “N AA” indicates that the market was not attractive to attack. “N DD” indicates that the market was not difficult for established incumbents to defend.

Capital One’s experience in U.S. credit card issuance, Canadian credit card issuance, U.K. credit card issuance, and sub-prime and super-prime auto finance all support our proposition regarding newly-vulnerable markets. Likewise, their early experience with cell phone service and dial-around long distance service, when customer profitability gradients were attractive, supports our proposition.

Capital One’s experience in international markets other than Canada and the U.K. does not weaken support; these markets were not newly-easy to enter, and Capital One did not enter. Likewise, mortgage issuance and insurance underwriting were not easy to enter, and travel agency and retailing businesses do not appear to have strong customer profitability gradients that
would make them attractive to attack, so Capital One’s decision not to compete in these industries likewise does not weaken support for our proposition either.

Telecommunications services provide what may be the most interesting data point for assessing our proposition. When inappropriate industry analysis led incumbent telecommunications companies to reduce prices below the level needed for profitability, the lack of an attractive customer profitability gradient led Capital One to exit. This does not weaken support for our proposition.

5b. Proposition 2 and the Erosion of Opportunity: It Becomes Less Attractive for a New Entrant to Attack

Proposition 2 suggests that over time markets are no longer newly-vulnerable, and, indeed, that they are no longer vulnerable to new entrants at all. Actions taken by the first round of attackers, and perhaps defensive actions taken by incumbent firms under attack, are sufficient to eliminate vulnerability. The principal theoretical reason for this is the reduction of the customer profitability gradient as incumbents and competitors introduce ever-more efficient pricing. In the limit, all customers will be priced at their risk-adjusted rate of return, expected earnings from all customers will approach the cost of capital, and only the most efficient card issuers will survive.

When card issuers offered all customers the same price on credit cards despite the extreme differences in earnings that existed across customers, the resulting customer profitability gradient made it easy for new entrants to prosper. Phrased differently, if some customers earn more than $1,000 annually for the bank, while others cost almost that much to serve, there is a massive wealth transfer between customers. A new entrant, with more accurate pricing, can charge truly profitable customers an APR of 9%, can charge other less profitable customers 19.8%, and can
carefully avoid having any of the worst accounts in its portfolio. Capital One initially prospered with less than two dozen price points. However, as competitors introduced multiple price points, Capital One continued to flourish, albeit with greater effort. As efficient pricing has entered the industry, the number of prices has increased from one to dozens, from dozens to hundreds, and from hundreds to thousands. The spreads available from a competitor’s mispricing have decreased as competitors have given themselves more pricing choices and reduced the size of their pricing errors.

Strategies like balance transfer are so widely copied that Capital One no longer heavily relies upon them, and new entrants could not expect to gain market share with simple product design. Indeed, Capital One has replaced its simpler “look and know” products with more complex “test and learn” offerings. The full power of data analysis is required to develop products, attract profitable accounts, and to retain them as profitable accounts as both customers and the competitive environment change.

In aggregate, the effect of all of these changes is to make the market less attractive for new entrants to contemplate entry and attack.

5c. Proposition 3 and Sustainability of Advantage

Proposition 3 suggests that members of the first round of new entrants in a newly-vulnerable market can succeed to the point where they can not readily be attacked, either by new entrants or by the incumbent firms that they initially attacked. It certainly would not be easy for a new entrant to attack Capital One. As Capital One has grown from 5 million accounts at the time of the IPO in November 1994 to over 48 million accounts in Q2 of 2005, it has become one of the largest and one of the most efficient transaction processors in its industry.
Some results of its scale are less obvious. Capital One has the largest test-and-learn data analysis of any consumer financial services firm, and its direct marketing campaigns have made it the largest single customer of the U.S. Postal Service. Indeed, approximately 1% of all mail carried by the Postal Service originates with Capital One. A huge bank can afford to run statistically significant samples, even those that are unprofitable, without jeopardizing overall profitability; a smaller bank cannot. This is an important advantage for Capital One in a market where obvious product designs have already been deployed. In 1992 Capital One was able to fund just over 1,000 tests of specific combinations of product attribute, price, and target group demographics. This grew rapidly for several years, and more recently has held steady at about 30,000 tests annually. In aggregate these tests have produced a wealth of knowledge that informs all decisions within the bank. There is so much a new entrant would need to learn, and so little surplus available from each account to fund this knowledge until the competitor has actually learned it.

Paradoxically, Capital One’s lower interest rates themselves allow it to offer lower interest rates than many competitors. It has long been known in finance that high interest rates discourage the most credit-worthy customers, who have many other, lower-priced alternatives. Likewise, high rates do not discourage the riskiest accounts, who know that they may be unable to repay creditors; they view the risk as largely borne by creditors, and not themselves. In the limit, high rates are no deterrent to fraudulent customers, who have no intention of repaying their credit card debts. So, in brief, as Nigel Morris notes, “high rates discourage good borrowers without discouraging bad borrowers, and Capital One’s lower rates lead to a better portfolio of accounts, produce lower losses, and enable Capital One to continue to offer better rates.”
Despite initial worries, Capital One management now seems convinced that their initial attack has led to a secure position in banking. Many of the original bank officers, including Chairman Rich Fairbank, Nigel Morris, Scott Barton, and George Overholser at one time or another have made statements about how worried they were about their competitors figuring out how to implement an information-based strategy and destroying their profitability. Indeed, Nigel Morris not only stressed that Capital One was an information-based strategy firm and not a bank, but in previous years he maintained an informal set of exit strategies for taking the company out of credit card issuance when it no longer was profitable for them to function in this industry. Nigel and his colleagues now feel safely entrenched as a dominant player in a profitable industry.

6. Assessments and Conclusions

6a. Assessment — Success in Newly-Vulnerable Markets

Indeed, as a company Capital One has been successful by any measure. The “triple double” described in the introduction demonstrates that the company’s success has not been matched by even the best of the Fortune 500. More specifically, success has occurred in what we termed newly-vulnerable markets, as a result of the implementation of an information-based strategy. Capital One has replicated its information-based strategy in various markets, but where the necessary conditions for newly-vulnerable markets were absent, success has likewise been absent. While our data set is too small and informal to test hypotheses in any statistically meaningful way, the data support our three propositions.

6b. Other Explanations
Can we discount the propositions and the role of an information-based strategy in attacking a newly-vulnerable market and find alternative explanations for Capital One’s success?

- Can we attribute their success to **good luck**?
- Can we attribute their success to the firm’s **culture and its people**?
- Can we attribute success to the firm’s **organizational structure and design**?

Good luck is unlikely as an explanation of success, considering the number of years examined and the number of different markets that have been considered. Success has been too consistent in the areas where the theory of newly-vulnerable markets predicts it, and has been absent where the theory does not predict success.

Culture and people almost certainly have played a role in the success that Capital One has achieved. The bank competes with Wall Street and with top strategy consulting firms for new MBA hires, and not with other retail banks. Screening new employees is more rigid and training is more comprehensive than at other retail banks. Salaries are higher, attracting a better applicant pool. These employees are then given greater freedom of action to innovate than other banks. Any employee with a good idea is empowered to test it, and any employee who discovers something attractive with a test is encouraged to take the results directly to the chairman. Indeed, a new employee with the firm reported, “I’ve never heard that phrase, ‘Let’s test that,’ as many times in my previous life as I have since joining the bank!” Nigel Morris explicitly acknowledges all of this. “At Capital One, successful implementation of their more complex strategy begins with hiring the right people.” According to Nigel, “We compete with McKinsey for the best graduate students; we’re not competing with commercial banks... Above all, we
know that the key to our success has been and will continue to be our commitment to hiring and developing incredibly talented and motivated associates.”

Organizational structure and design likewise almost certainly have played a role in the success of the firm. There is greater integration between sales and risk management, between marketing strategy and credit policy, and between data processing and all other aspects of the organization, than at competitors. Scott Barton describes this simply by saying, “Nothing important is a separate department at the bank. We do not have a Credit Policy Department deciding whether or not a customer or group of customers should be offered credit, separate from a Marketing Department that decides which customer segments to go after. We do not have statisticians supporting the Credit Department to determine if something was a good idea only after it has been rolled out on a massive scale by Marketing.” Credit and Marketing are together in the same Marketing and Analysis Department as the statisticians and analysts who support them. Strategies are designed around hypotheses, credit implications are explored at the same time as marketing, and the entire package is analyzed and tested before it is rolled out.

However, culture and people, or organizational structure and design, do not explain the bank’s performance in areas in which Capital One could not enter or could not succeed. Indeed, these unsuccessful efforts were contemplated or launched by the same management team, with the same culture and people, but in markets that did not satisfy the conditions for Proposition 1.

6c. Conclusions

Capital One continues to flourish. Its performance since its IPO has been dazzling when compared to the market as shown in Figure 13 below. Capital One's Auto Finance (COAF) business has grown so rapidly that employees jokingly refer to COAF as Capital Two. The
COAF business is currently valued at 50 times its acquisition cost, with growth occurring during a period in which most mono-line auto finance competitors have failed or exited the industry. Moreover, their credit card business is safe from new entrants attempting to duplicate the Capital One strategy. The industry is no longer easy to enter, with significant regulatory restrictions on entry. The industry is no longer attractive to attack, since Capital One and its competitors have now effectively priced all customers much closer to their risk adjusted rate of return. In the beginning Capital One was able to find customers who were being charged 1200 basis points or more above their cost to serve; now they are delighted to find competitors' customers who are priced 300 basis points too high.

![COF vs. SPX](image)

**Figure 13.** Capital One’s share price performance since its IPO, compared to the performance of the S&P 500 index.

The industry continues to face significant consolidation, both in credit card and in banking more generally. When Capital One entered the credit card business the top three issuers
accounted for 18%; today it is 65%. Capital One anticipates consolidation in all aspects of banking, and believes that it must move away from its traditional mono-line stance in order to compete. It will be interesting to see how they fare when competing as a traditional bank, rather than an opportunistic attacker in newly vulnerable markets.

In summary, we have presented a theory of newly-vulnerable markets and used Capital One to provide us with a small set of natural occurring experiments. We have found that the theory of newly-vulnerable markets has been a good predictor of when and where Capital One has been able to attack successfully; as important, it has provided reliable predictions of when and where attack was not successful.

References


**Appendix 1: Quasi-Experiments**

Benbasat, Goldstein, and Mead (1987), Galliers and Land (1987), Lee (1989a, 1989b), and Yin(1994) have each examined the contribution of case research to MIS, Swamidass (1991) has explored the role of case research in operations management, and Eisenhardt has explored the role of case research in the formation of theories more generally [Eisenhardt(1989)]. It is perhaps essential to note, as does Swamidass in the context of operations management, that "...It
is one thing to consider deduction as an auxiliary and useful method; it is quite another matter
to believe that it is the primary method for deriving all ‘truth’”. Swamidass, therefore, feels it
essential to observe that empirical methods contribute a great deal, even to the creation of theory
through deductive methods, by grounding the theory and providing an "empirical check."

Lee notes the difficulty of constructing valid laboratory experiments for examining MIS
issues: "[T]he study of a real-world MIS in its real-world setting precludes, by its very nature,
the laboratory controls of a laboratory experiment." [Lee(1989a, pp. 35)] In particular, the need
to test theories based on complex differences between or among competitors, and to test them
against other theories based upon complex patterns of behavior among competitors and
customers, precluded stylized and simplified experiments in the laboratory environment.

Cook and Campbell(1979) use the term quasi-experiments to describe "experiments that
have treatments, outcome measures, and experimental units, but do not use random assignment
to create the comparisons from which treatment-caused change is inferred." The comparisons in
quasi-experiments are among non-equivalent groups that may differ from each other in complex
ways, and in ways other than the presence or absence of the treatment about whose effects the
experiment is intended to support conclusions; thus, the task facing the experimenter is quite
challenging.

Cook and Campbell provide an insightful explanation for the need for experimental
methodologies outside the laboratory setting: "Thus, there were two major reasons for using
experimental designs in theoretical and practical research in field settings. The first was an
increasing unwillingness to conduct experimental tests in controlled — and usually laboratory
— settings that were irrelevant for both theory and practice. The second arose out of a
dissatisfaction with non-experimental methods for inferring causation." [Cook and
Campbell(1979, pp. 9) In other words, laboratory experiments were generally inadequate because of the limitations of what could be controlled and studied, while field studies were frequently inadequate because the methodological naïveté of the researchers limited the application of controls. We were able to identify an experimental setting with naturally occurring controls, in which experimental units received the desired treatments with the desired timing. Lee refers to this as a natural experiment.

Lee(1989a) uses the term natural experiment to describe an experiment that does not make use of random assignment, the most common form of control in laboratory settings, but rather makes use of natural controls. That is, a natural experiment requires the researcher to locate an experimental population where different experimental units have received by chance or natural occurrence different experimental treatments. Natural experiments, as a subset of quasi-experiments, like them are "experiments that have treatments, outcome measures, and experimental units, but do not use random assignment to create the comparisons from which treatment-caused change is inferred. Instead, the comparisons depend on nonequivalent groups that differ from each other in many ways other than the presence of a treatment whose effects are being tested." [Cook and Campbell(1979, pp. 6)]

Jick(1984), borrowing from Denzin, defines triangulation as the combination of different methodologies and different data sources in the study of the same phenomenon. "Organizational researchers can improve the accuracy of their judgments by collecting different kinds of data bearing on the same phenomenon." [Jick(1984, pp. 364)] The use of multiple data sources and complementary methods increases the confidence that findings are in fact accurate, and not merely "an artifact" of the experimental research methodology. Jick notes that differing notions of triangulation agree that "qualitative and quantitative data should be viewed as
complementary, rather than as rival camps." [Jick(1984, pp. 364)]

### Appendix 2: Credit Card Industry Terminology

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Credit scoring models</td>
<td>Credit scoring models are models that predict what an applicant's likelihood of pay-off a loan, or of ultimately failing to do so. They are used for everything from determining whether an applicant should be given a credit card and the limits on it, to determining whether an applicant should be given an automobile loan or a mortgage.</td>
</tr>
<tr>
<td>FICO</td>
<td>FICO is registered trademark for Fair Isaac and Company, or Fair Isaac for short. Fair Isaac is a company who constructs 'credit score' tools for lenders who use them to evaluate the credit of their customers and prospects. FICO credit scores are among the most well known credit scores, but there are certainly other competitors of Fair Isaac who also construct credit scores. Additionally all three of the national credit bureaus may construct proprietary credit scores of their own, independent of Fair Isaac (definition from <a href="http://www.creditreporting.com/fico-credit-score.html">http://www.creditreporting.com/fico-credit-score.html</a>)</td>
</tr>
<tr>
<td>Revolver</td>
<td>A revolver is a credit card user who always has a balance. He may pay off a significant portion of the current debt, but then incurs new debts. Revolvers pay finance charges, and low risk revolvers are the most attractive credit card customers since they are extremely profitable.</td>
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<tr>
<td>Low volume transactors</td>
<td>Low volume transactors, also called convenience users, use their cards for small amounts and always pay off their balances each month. The bank never earns a finance charge, and the small amount earned by the issuer on each transaction does not fully recover the costs of serving these customers.</td>
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<tr>
<td>Charge offs</td>
<td>Charge offs are the losses associated with customers who default, declare bankruptcy, or for whatever reason do not ever repay their debt to their card issuer.</td>
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<td>Balance transfer product</td>
<td>The balance transfer product was an innovation introduced by Capital One. It allowed customers to transfer their existing, outstanding credit card balances to Capital One; in essence, Capital One paid off their debts at their previous card issuer, and then customers repaid Capital One.</td>
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<tr>
<td>Outstanding card balances</td>
<td>Outstanding card balances (also called simply outstandings) represent the total amount of unpaid balances owed to a credit card issuer by its customers. It is the sum of all unpaid charges and all unpaid finance charges.</td>
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<tr>
<td>Retention specialists</td>
<td>A retention specialist is a customer service representative whose job it is to keep customers from terminating their commercial relationships. Retention specialists at capital One focus on keeping profitable customers from leaving for better offers elsewhere, by designing packages that are good enough to keep the customers while still preserving their profitability for Capital One.</td>
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<tr>
<td>Mono-lines</td>
<td>A mono-line bank is, as the term suggests, a bank that engages in only a single line of business. MBNA America and Capital One are perhaps the best known mono-lines, with tens of millions of credit card customers, but without traditional branches, savings accounts, checking accounts, or other traditional banking specialists.</td>
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