Journal of Strategic Information Systems 17 (2008) 179–189

Contents lists available at ScienceDirect

Journal of Strategic Information Systems

journal homepage: www.elsevier.com/locate/jsis

Capital One Financial and a decade of experience with newly vulnerable markets: Some propositions concerning the competitive advantage of new entrants

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ARTICLE INFO

Article history:
Received 31 January 2008
Accepted 7 May 2008
Available online 27 June 2008

Keywords:
Newly vulnerable markets
Information-based strategy
Market entry
Differential pricing
Customer profitability gradient
Capital One Financial
Information economics

ABSTRACT

Market share and brand recognition have historically provided advantage to established players in mature industries. The success of Capital One, an attacker in the mature credit card industry is therefore interesting, both to researchers and to executives developing strategies. A partial explanation is offered by the theory of newly vulnerable markets. The success of Capital One can be partially attributed to its application of information-based strategies to several newly vulnerable markets, allowing it to target and retain the most profitable customers. These strategies sustained double-digit return on equity and double-digit increase in sales volume and profits every year of our study.

1. Introduction

In 1997, when then-president of Capital One Financial[2] 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*". As the senior management team noted quickly, its success in banking, and elsewhere, is due to a powerful new information-based strategy, backed by senior management champions, fully integrated with the corporate culture, 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 powerful incumbents already enjoyed significant brand recognition and economies of scale. When viewed as a classic industrial conflict, it should not have been possible for Capital One to succeed, leaping from 15th in 1993 to 5th in 2003 among U.S. credit card issuers, while constantly showing double-digit growth in market size and revenues, and simultaneously producing greater than 20% growth in earnings per share and greater than 20% annual return on equity in the ten years of our study. This case describes the interaction between Capital One's strategy and the competitive conditions in the marketplace that led to its dramatic success. It presents some propositions that, if proven to be correct, will allow firms in

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[2] Signet Bank's credit card division, which was taken over by Nigel Morris in 1988, was spun-off into Capital One Financial in 1994.

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doi:10.1016/j.jsis.2008.05.001

other industries to determine if conditions will support a similar attack on incumbents. We believe that Capital One's experience 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 transformed many industries in ways that we are still learning to understand and to model. A significant, and possibly under-reported, impact may be in the changing nature of competition among firms in mature industries. We refer here to 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. The markets that offer the greatest advantage to new entrants have been termed *newly vulnerable markets* (NVMs) (Clemons et al., 1996; Clemons, 1997).

Capital One provides an illustration of an attacker, entering as a credit card issuer in the early 1990s with a novel information-based strategy, and quickly rising to the status of a major player in the bank-issued credit card industry. Although the card issuing industry was already mature, with every credit-worthy American household holding several bank-issued credit cards with the MasterCard or Visa franchises, Capital One was able to attack larger issuers with strong brands and scale of operations. It then attempted to replicate its strategy in other markets, both outside the U.S. and outside credit card issuance. Capital One, its initial foray into credit cards, and its subsequent moves into other sectors, provide an opportunity to examine the theory of NVMs through naturally occurring quasi-experiments.

Today, all financial sector innovations are both motivated by information and dependent upon information technology. This view 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... is absolutely key to the success of this company*".

2. Theoretical explanation for Capital One's success: the theory of newly vulnerable markets

Capital One's success is an instance of using an information-based strategy to attack a newly vulnerable market (NVM). This theory identifies suitable opportunities for attack. The preliminary validation, not the theory itself, is the contribution of this case study.

There are three features that characterize NVMs and that, collectively, constitute the source of the attacker's advantage:

(1) *Newly easy to enter*: an industry can become newly easy to enter due to regulatory change that permits entry, changes in technology that reduce the cost of entering or reduce minimum scale needed to compete, change in distribution systems that reduce barriers to entry or reduce minimum scale needed, or change in customer preferences that reduce advantages of incumbents. We stress *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 firms were earning excess profits, this is rare. More commonly, profits are modest, but pronounced differences exist in the profitability of individual accounts. Such differences in customer profitability occur when there are great differences among customers, in their cost to serve, or in the revenues that they generate, and 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 prior operation 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 makes 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 lower scale or other forms of higher costs.

(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 are able to replicate attackers' strategy and eliminate customer profitability differences then the return on the attacker's investment is limited. 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 provided market opportunities for new communications firms. In other industries organizational structure and cultural limitations have limited incumbents' ability to defend themselves.

The theory of contestable markets (Baumol, 1986; Baumol et al., 1988) clearly guided the development of the theory of NVMs. Contestable markets can be entered and exited at no cost, preventing firms from gaining and from abusing monopoly market positions. The theory is in principle static; markets either are, or are not, contestable. The most obvious sign of a non-contestable market is supernormal profits in one area, used to subsidize businesses in other areas. Since the existence of these transfer payments can be taken as evidence of monopoly power in one area (long distance telephony, operating systems) and the stifling of competition in others (local telephony, internet browsers), the principal use of contestable market theory has been regulatory. Contestability, however, does not address characteristics of markets that might prevent incumbents from replicating the strategy of their new entrants and successfully defending themselves.

In contrast to the static nature of contestability theory, the study of NVMs is inherently dynamic. NVMs have in some sense become newly contestable, in part because they have become newly easy to enter. The study of NVMs is concerned with also cross subsidies, but as indicators of a customer profitability gradient that encourages attack by new entrants. 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.

Conditions defining NVMs, and the resulting advantage of new entrants, have been observed in a range of industries (insurance, telecommunications, securities broking, retail banking, securities exchange operation, credit card issuance), in the U.S., Canada, the U.K., continental Europe, and Hong Kong (Clemons et al., 1996). The theory of NVMs has been applied to channel encroachment, viewing the distribution channel as potentially vulnerable to attack by primary suppliers of services; the theory was used to predict the success of airlines encroachment into the business of travel agencies and the failure of consumer packaged goods companies' efforts to move into grocery retailing (Clemons and Row, 1998). More recently, the theory of NVMs was used to explain moves by airlines to encroach on and disintermediate their global distribution systems (Granados et al., 2008).

3. From signet bank to Capital One Financial

3.1. The Introduction of an information-based strategy

In 1988, Rich Fairbanks and Nigel Morris entered the credit card industry as executives with Signet Bank, a top 25 issuer. In 1994, Signet spun-off its credit card division into Capital One Financial, a mono-line issuer. Soon after, Capital One became a powerful, established player in the credit card industry.

As executives at Signet Bank in the late 1980s 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*, or differences in profitability that existed across customers; (2) understanding the attributes of those customers who represent the best deciles along the customer profitability gradient and; (3) determining how to reach these best customers, through a combination of targeted direct marketing (push) and product design (pull).

Rich and Nigel believed that although virtually all credit-worthy families had more than one charge card, a strong customer profitability gradient made attack attractive. 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. Rich and Nigel felt that it would be possible to target the desirable end of the customer profitability gradient, and to attract a large number of profitable customers, greatly increasing a bank's profits.

3.2. Initial period of success at Signet

As part of their preparation for the implementation of their information-based strategy at Signet Bank, Rich and Nigel took over responsibility for information systems. Nigel Morris argued 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*". Therefore, Rich and Nigel immediately bought out the contract with EDS. They developed credit scoring models internally rather than relying upon black box models provided by service bureaus. In addition, they brought in-house all customer contact and data processing functions.

The next step in translating *The Great Idea* into a business strategy was identifying the best, the worst, and the average accounts. The principal source of an issuer's revenues and profits is finance charges, fees paid by cardholders who do not pay off their outstanding balances during the monthly grace period. A customer who maintains high balances and pays finance charges is ideal. The best 20% of these customers accounted for more than 125% of issuers' profits. The most profitable decile of a bank's customers, with revolving balances of several thousand dollars, produced revenues in excess of $1000. These low-risk *revolvers* can be considered *love 'ems* accounts. A customer who goes into bankruptcy and defaults clearly represents a significant loss for the bank; less dangerous, but in aggregate almost as bad, are the customers who use the card for convenience, incur only low-balances, and pay them off in full each month. These low-volume *transactors* never incur finance charges, and for the issuer serving them represent little more than supporting a collection of perpetual, zero-interest loans with monthly mailings. Clearly, these are expensive customers to maintain; indeed, they can be so lethal that officers of an Asian bank termed them *kill_yous*. To be explicit, the worst two deciles of an issuer's customer portfolio create only losses, often equivalent to 25% of total profits or worse. As Nigel Morris observed, "*Any fool can lend money. The trick is finding someone who will pay you back . . . slowly*!" The bank's strategy was intended to do precisely this.

To learn the attributes of the most profitable customers and the products that were attractive to them, Signet adopted a *test-and-learn* strategy, systematically testing to determine what worked and for which accounts. The bank initiated hundreds, then thousands of tests. Products were designed and 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 net present value of finance charge earnings, and

charge-offs (bad loan losses). The design, execution, and analysis of tests and the design, implementation, and marketing of the resulting new products required significant investment in information technology not incurred by banks that did not rely upon an information-based strategy.

Fig. 1 shows the scatter-plot of initial 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. Signet hit the sweet spot by pioneering the *balance transfer product* in 1991. This product profoundly altered both profitability and the philosophy of Signet's credit card operations. 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. Customers who transferred their balances from accounts at competitor banks maintained high-balances, paid them off slowly, and provided a constant stream of finance charges. As Fig. 1 illustrates, other tests had a scatter-plot, with the likelihood of charge-off increasing slightly with customers whose balances came closer to their account limits. In contrast, the balance transfer product generated low charge-offs, consistently high-utilization, and consistently high earnings from finance charges.

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 Fig. 2 below. Signet (which became Capital One in 1994) grew faster while maintaining charge-off rates that were lower than industry average, as shown in Fig. 3.

This combination of sustained growth in receivables, successful targeting of extremely profitable high-balance low-risk revolvers, and low charge-offs earned the bank the honor of being named Credit Card Management's issuer of the year for 1995 (Lucas, 1995). It was 18 months before other banks replicated the balance transfer product, and even longer before competitors began to experiment with differential pricing.

Signet's targeted attack on competitors' most profitable accounts cannot be seen as merely the start of a price war. Signet was among the high-cost producers in card issuance. It lacked branches to fund its outstanding card balances, it lacked scale in data processing, and it was funding huge exploratory test-and-learn operations, which produced consistent, albeit manageable, losses. When it attracted only love 'ems, it had no portfolio of unprofitable accounts to subsidize and consequently Signet could be profitable with lower APRs, even after paying for funds and paying for their higher cost data processing operations. Signet's average earnings per accounts were significantly higher than Citibank's over the same period, because their account portfolio corresponded to only the best two or three deciles in Citibank's portfolio.

Every bank wants to attract revolvers, customers who pay their accounts off slowly and pay finance charges each month. It is obvious that the customers who are most interested in lowering their monthly finance charges are those who actually pay finance charges, or precisely the ones that Signet wanted to attract. This is an example of a screening mechanism (Milgrom and Roberts, 1992), a contract design that Signet uses to attract just the customers it wants. 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 revolvers. We know of no example of the application of screening in retail banking that is more compelling than that of Signet's balance transfer product.

3.3. 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

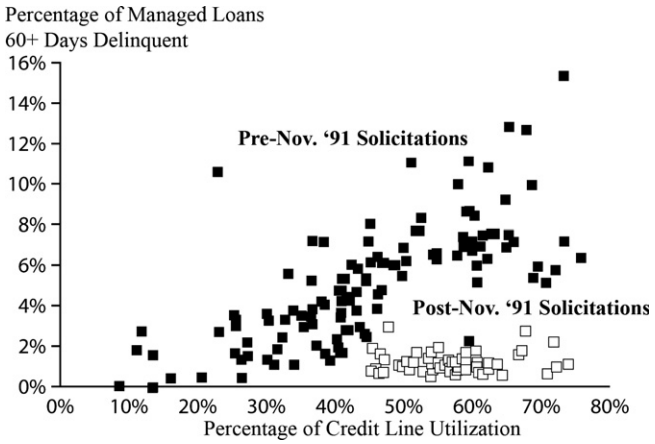

Fig. 1. Capital One hits the "Sweet Spot" (the unshaded squares) with the balance transfer product.

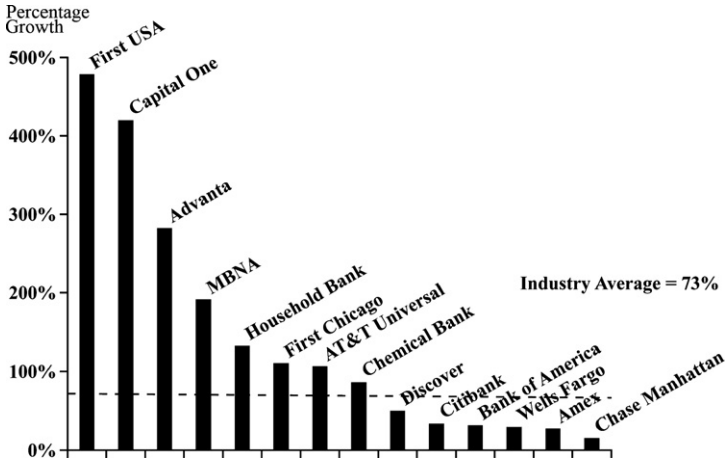

Fig. 2. Percent loan growth from 1992 to 1995.

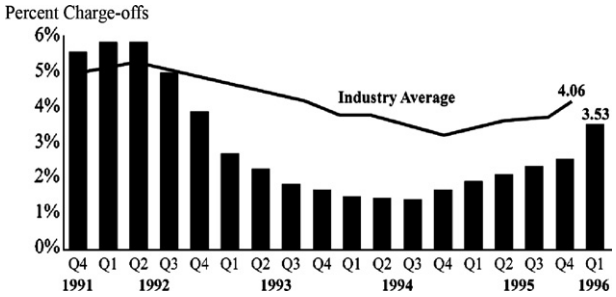

Fig. 3. Percent charge-offs.

from $1 billion in outstandings to almost $7.5 billion. 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 (i.e., a bank that offers credit cards but no other products or services). The IPO was held on November 16, 1994. Capital One's success has been dramatic, as Figs. 4–7 illustrate.

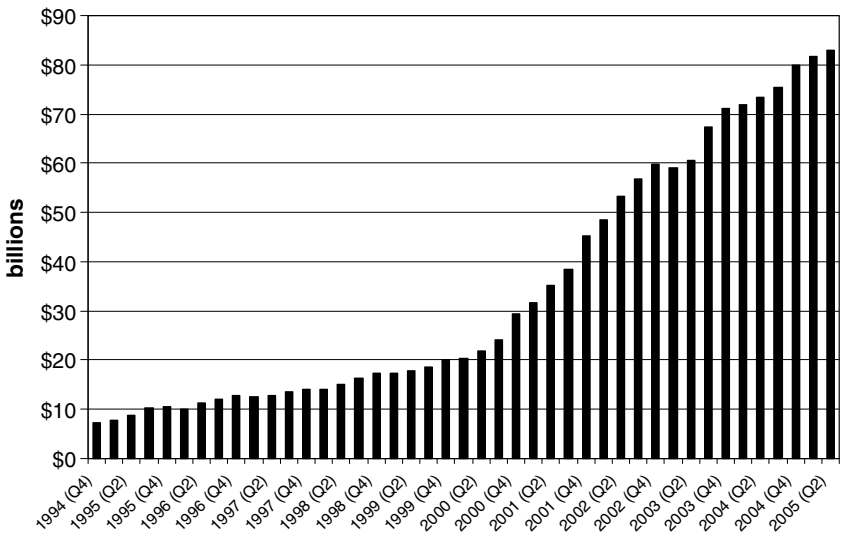

Fig. 4. Amount of managed loans (or outstandings).

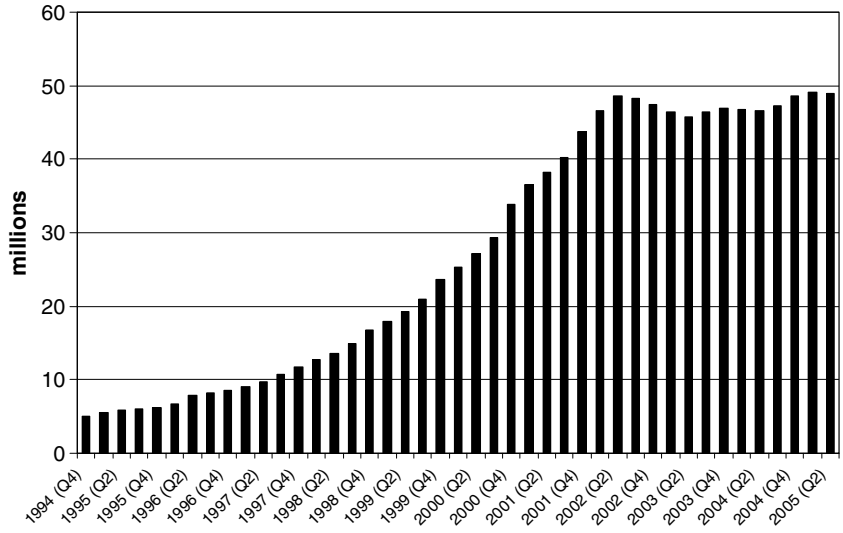

Fig. 5. Number of accounts.

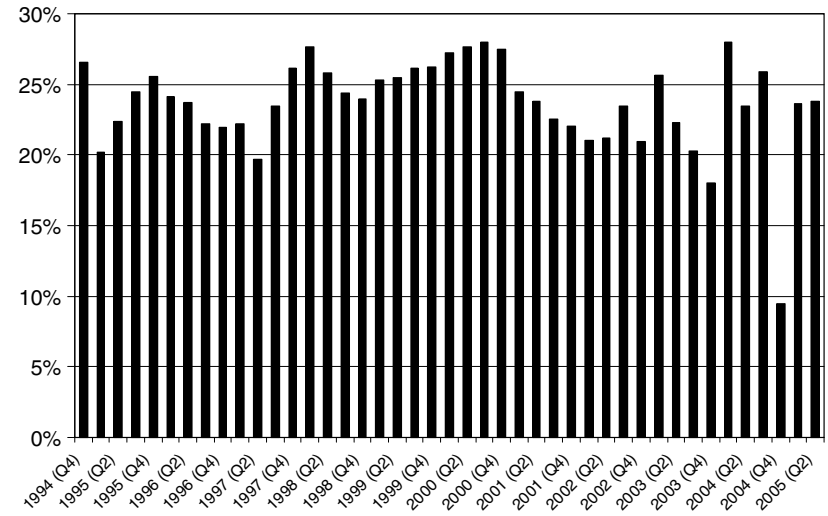

Fig. 6. Return on equity.

3.4. Increasing competitive pressure in the core credit card business

Although competitors began to replicate Capital One's strategy, Capital One continued to innovate and to improve its targeting and 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 remained 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. Moreover, there is less room for error. Since your earnings from good customers are reduced by competitive pressure, you are less able to subsidize the losses created by bad accounts. 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. Capital One took a number of defensive actions in order to retain profitability.

(1) *Dynamic re-pricing of customers' accounts to reflect changes in their profitability*: Capital One constantly re-priced individual customers based on their risk. Accounts were closely monitored, allowing Capital One to anticipate shifts from slow-pay status (good) to no-pay status (bad!) and to take defensive action to reduce or to eliminate losses.
(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 specialists had screens that allowed them to determine the break-even APR for each customer, and the training to speak with custom-

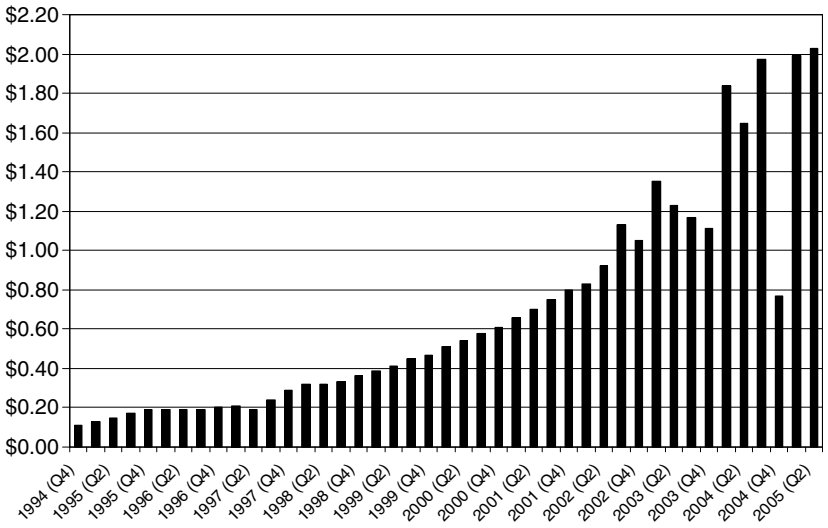

Fig. 7. Earnings per share.

ers 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.

(3) *Limit charge-offs*: 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.

As industry margins shrank, Capital One improved both its risk management and its precision pricing, avoiding losses and avoiding both overcharging and undercharging. 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*".

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 their success has led to a cost advantage that would be impossible for new entrants to replicate. As Capital One grew from a top 25 card issuer to a top 5 issuer, their 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*". Scott Barton adds, "*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.

3.5. Capital one's initial success in credit card issuance

We now apply the theory of NVMs to the analysis of Capital One's success as a credit card issuer, by examining how the three individual factors that characterize a NVM – newly easy to enter, attractive to attack, and difficult to defend – apply.

Newly easy to enter: Various trends at the time of Capital One's entry made the industry newly easy to enter. First was a massive shift in public perception and acceptance of the idea that credit cards need not be issued by the cardholder's local bank; this resulted from a national ad campaign by Citibank, seeking to get a significant scale advantage by becoming the first truly national credit card issuer. 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 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: 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. Indeed, targeting allowed Capital One to achieve the best profitability of card operations within the industry, with ROA two and a half times the industry average.

Difficult to defend: The initial attacks by Capital One (then Signet Bank) did not draw an immediate response from the banks that were being targeted. First, many competitors did not see themselves as under attack, nor did they appreciate the risk. A competitor's senior vice president of marketing strategy, when he first noticed that he had lost several thou-

sand accounts to Signet the previous month, concluded calmly that it was not a problem because he had several million more accounts. Only when further analysis showed that these were his maxxed-out revolvers, the low-risk customers who carried large balances and paid high-finances charges, did he begin to become concerned. Other competitors might have seen the attack as no more than the start of a price war; they probably would have concluded that Signet did not have the resources to continue. Additionally, the structure of other banks limited their ability to respond; while marketing departments might be worried about the loss of several thousand accounts, they did not have the ability to renegotiate rates for individual account holders, nor did they have control over the data processing resources required. Credit management departments were able to authorize selective rate reductions but often failed to see how this would help; reducing the APR of *any* accounts, in order to increase profits, seemed quite absurd. Finally, responding early was not seen as a good strategy for any incumbent bank; reducing the APR of large revolvers would have immediately reduced a bank's profits (Clemons and Gu, 2003).

4. Beyond domestic credit card operations

4.1. Geographic expansion

Capital One's first expansion beyond domestic U.S. credit card operations was its move into Canada and the U.K. Both Canadian and U.K. markets 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 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.

Capital One's success in both markets has been striking. Growth in the U.K. has been rapid, showing greater 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:* 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:* 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 American 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. Warnings such as "*No U.K. banking customer is going to change his High Street banker for a mere 1800 basis points*," now seem not only overly optimistic but quite absurd. Combined international growth was rapid, growing from $1.1 billion in 1998 to $4.7 billion in 2002.

Despite initially high expectations for France and Germany, Capital One's planned expansion into these markets has been delayed. Initially, the hope was that France would be 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, largely because after reexamination Capital One saw little unmet need for additional sources of consumer credit, but initial investments were made in France, where consumer adoption has not yet been high enough to justify Capital One's expenditures. Although France and Germany appeared easy to enter, they were not.

4.2. 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-premium, 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-premium business is very different. This business is based on observations that Capital One has made on the relative riskiness of different classes of automobile purchases. Combining observation of predictors of customer riskiness with careful analysis of applicant demographics and credit history allows Capital One's super-premium lending arm 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 (other than finance operations owned by automobile manufacturers). Its share of the market has grown steadily, as has its ranking on size and on earnings. The industry was newly easy to enter because there were new mechanisms available for marketing that did not require a branch network and that made it possible to assess the risk of each customer more accurately. Moreover, the industry was attractive to attack because of a strong customer profitability gradient. As Dave Lawson, the head of Capital One's auto finance division, notes, "*We reinvented the consumer auto finance experience. From a credit risk and direct marketing perspective the industry was clearly unsophisticated; there were differences in customer profitability we could work with*". Scott Barton describes the situation more colorfully; "*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*". Moreover, it appears that the industry was too unsophisticated and too fragmented to offer an effective counter to Capital One's attack.

4.3. Unsuccessful and less successful line extensions

Capital One considered entering as a *retailer* of gifts and flowers but decided against doing so. 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. The analysis of prospects for entry into travel was more complex. Corporate travel does not appear to be newly easy to enter; the industry has relied upon technology for decades and considerable scale is required in order to negotiate with hotels and airlines and to obtain the best possible rates. Budget-conscious leisure travel did appear to be easy to enter, with new web-based services springing up, but there did not appear to be a strong customer profitability gradient.

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 the glut of bandwidth had also made cell phone service a commodity, and Capital One quickly became the nation's independent largest reseller of cell phone airtime. Moreover, they determined that, based on expected usage, there was a strong customer profitability gradient. 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 based on 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; now some customers were unprofitable while others were worse. Discouraged executives noted that you could not be more profitable than your most desperate competitor, and Capital One exited the industry.

5. Propositions for newly vulnerable markets

We offer the following propositions to explain or predict the success of attackers in NVMs.

Proposition 1. *(Newly vulnerable markets)*

The three conditions listed above (newly easy to enter, attractive to attack, difficult to defend) do indeed create a NVM, weakening the scale-based advantages of incumbents and thus creating an opportunity for new entrants to succeed as high-cost, low-price, and profitable attackers.

Proposition 2. *(End of vulnerability)*

NVMs become less attractive after the first round of successful attack as the attacker's strategy results in more efficient pricing and reduce 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 NVMs 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 invest in extensions to their basic strategies. This may involve pursuing statistically significant test-and-learn refinements to their initial information-based strategies at acceptable cost and with acceptable risk, as Capital One did. It may also allow investment in IT innovations that others do not see, or that build upon applications that others do not possess. When Rosenbluth Travel did this with their early travel agent support services for corporate travel in the 1990s we termed this "*hustle at a discontinuity, followed by investment to gain a sustainable resource advantage*" (Clemons and Row, 1991; Eisenmann et al., 2006; Granados et al., 2008).
(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 entrants.

6. Proposition 1 and newly vulnerable markets

We now examine each of the Capital One business units described above and consider whether or not the unit can be considered successful, and if so whether or not its success can be explained in terms of the theory of NVMs. Table 1 summarizes our results.

Capital One's success in U.S., Canadian, and U.K. credit card issuance, and in auto finance all support our proposition regarding NVMs. 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 France and Germany does not weaken support; these markets were not newly easy to enter. 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. Telecommunications services provide what may be the most interesting data point for assessing our proposition. When telecommunications companies reduced prices, the lack of an attractive customer profitability gradient led Capital One to exit. This does not weaken support for our proposition.

7. Proposition 2 and the erosion of opportunity

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. 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 mis-pricing have decreased as competitors reduced the size of their pricing errors.

8. Proposition 3 and sustainability of advantage

Proposition 3 suggests that members of the first round of new entrants in an NVM 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

Table 1
Summary of the success of Capital One's information-based strategy in a range of industries

Industry entered	Market condition	Result
Domestic credit card	Newly vulnerable market	Successful
Credit card in Canada	Newly vulnerable market	Successful
Credit card in U.K.	Newly vulnerable market	Successful
Credit card in France and Germany	Not easy to enter	Unsuccessful
Auto finance	Newly vulnerable market	Successful
Retailing gifts and personal items	Not attractive to Attack	Unsuccessful
Telecommunications	Not attractive to attack	Unsuccessful

not be easy for a new entrant to attack Capital One. As Capital One has grown from 5 million accounts in November 1994 to 47 million accounts in the 2nd Quarter 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. 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, credit card operations at Signet Bank (which would soon spin-off to Capital One) was able to fund just over 1000 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. 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.

Nigel and his colleagues now feel safely entrenched as a dominant player in a profitable industry.

9. Conclusions

Capital One flourished throughout the period of our study. 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. Capital One's Auto Finance business has grown so rapidly that employees jokingly refer to it as *Capital Two*. Moreover, their credit card business is safe from new entrants attempting to duplicate the Capital One strategy. Indeed, as a company Capital One has been successful by any measure.

More specifically, this success has occurred in what we termed NVMs, 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 NVMs were absent, success has likewise been absent. While our data set is too small and informal to test hypotheses, the data support our three propositions.

In summary, we have reviewed the theory of NVMs and used a small set of natural occurring experiments from Capital One. We have found that the theory of NVMs 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.

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 (at the time we wrote the case) Nigel Morris and their President of fraud management operations at that time, Scott Barton.

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