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Profit from Customer Data by Identifying Strategic Opportunities and Adopting the "Born Digital" Approach[1]

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Executive Summary

We present a framework that maps the four data-driven strategies—Minimize Costs, Reward Loyalty, Personalize Interactions, and Acquire Customers—that a firm can enact to extract value from its customer data. The four strategies are distinguished by the potential repurchase frequency and the customizability of a firm's products or services. We describe each of the strategies and provide in-depth examples from companies in the hospitality industry. By positioning themselves within the four-strategy framework, firms in a wide range of industries will be able to envision how they can adopt the most appropriate strategy (or strategies) for exploiting customer data to improve profitability.

We also discuss the importance of "born digital" data, whereby data is captured in digital form, not digitized through scanning or manually input. A proactive born digital approach enables firms to better exploit opportunities for extracting business value from customer data.

THE NEED FOR DATA-DRIVEN CUSTOMER STRATEGIES

Whether a profit-oriented enterprise focuses more on recruiting new customers, retaining current customers, or both, is significantly determined by the *potential repurchase frequency* of its products or services. If there are few returning customers for a product or service that has a potentially high repurchase frequency, it is a clear signal that the company is missing an opportunity. However, firms with products or services that have potentially low repurchase frequencies need to focus their attention on acquiring new customers.

In addition, some products and services can be tailored to the specific needs and preferences of individual customers or customer segments. The *degree of customizability* of a product or service is related to its complexity. For example, Canyon Ranch (a U.S.-based health resort and hotel chain) offers over 230 spa, health, and healing services that now include medical laboratory tests worthy of some of the most advanced hospitals in the country. Because of the wide array of options and the ability to tailor services to the unique needs of a guest, every Canyon Ranch guest "experiences a different Canyon Ranch," as the firm is fond of saying.[3]

Based on these two dimensions—potential repurchase frequency and product or service customizability—we propose a framework that identifies four strategies for exploiting customer data. We describe each strategy in turn, illustrating them with examples from companies in various segments of the hospitality industry, based on

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3 Applegate, L. M., and Piccoli, G. *Canyon Ranch,* Case #805027, Harvard Business School Publishing, 2004.

our in-depth research in that industry.[4] The hospitality industry provides a good test bed for our ideas because the service experience leads to the generation of significant customer data. The ideas advanced in this article, however, are not unique to the hospitality industry.

The strategic opportunities for profiting from customer data obviously require a firm to capture high-quality data about its customers. The Internet and the pervasive computerization of business activities enable most customer data today to be "born digital"—i.e., captured directly in digital form at its inception and not manually input in computer systems or digitized through scanning a document. The adoption of customer relationship management (CRM) and business intelligence (BI) applications has often focused on using customer data collected as a byproduct of transaction processing systems. We believe companies should take a more proactive approach and consciously plan to capture data in digital form to enable more effective data-driven customer strategies.

We conclude this article by identifying the lessons that can be learned from the hospitality industry examples and presenting guidelines for applying the four-strategy framework to develop proactive born digital data strategies in other industries.

FOUR STRATEGIES FOR EXPLOITING CUSTOMER DATA

Our framework is predicated on recognizing that the business value of customer data can be assessed from the characteristics of the goods or services that every firm specializes in providing. Barring change of product mix or significant innovation, these characteristics are fixed and can be categorized on two principal dimensions: potential repurchase frequency and degree of customizability. As shown in Figure 1, categorizing products and services in this way gives rise to four strategies for exploiting customer data.[5]

1. Minimize Costs

A firm should focus on minimizing costs when there is little likelihood of repeat business and few options for customization. Transactions in such firms should be efficient and uneventful. The customer is served at minimum cost and neither party expects to have many future encounters.

In this type of business, there seems to be little potential strategic opportunity for exploiting customer data, at least when focusing on an individual product or service rather than the opportunities for bundling. There is little that managers can do with the customer data to increase loyalty or customize the product. Consider, for example, a chain of budget or limited-service tourist hotels in an exclusive fly-in destination, such as Hawaii or Fiji. Mid-scale hotels in these locations are generally a "window on an experience" rather than the experience itself, and the chain's value proposition is offering guests an affordable opportunity to experience a great location. Because of the time commitment and cost of reaching these destinations, repurchase is relatively infrequent. Under these conditions, the chain is better off focusing on efficiency and low prices. Figure 2 describes how one such chain—OHANA Hotels—deliberately decided not to adopt sophisticated CRM applications and focused instead on minimizing costs.

Another example is offered by businesses that serve mainly transient customers, such as gift shops or food operators adjacent to major tourist attractions (the Colosseum in Rome, for example). A restaurant in such a location has an almost entirely transient customer base. While it will want to provide good service to foster word-of-mouth referrals and, in the age of the Internet, ensure that it gets good reviews, management can extract very limited value from customer data. Such a business should therefore seek to create efficiencies by limiting investments in collecting and using customer data and instead manage each interaction as an individual occurrence.

4 Ibid.; Kwortnik, R. J., Piccoli G., and Applegate, L. M. *Carnival Cruise Lines,* Case #806015, Harvard Business School Publishing, 2005; Piccoli, G. "Outrigger Hotels and Resorts: A Case Study," *Communications of the AIS* (15:5), 2005, pp. 102-118; Ives, B., and Piccoli, G. "STA Travel Island: Marketing First Life Travel Services in Second Life," *Communications of the AIS* (20:28), 2007, pp. 429-441; Piccoli, G., Anglada, L., and Watson, R. "Using Information Technology to Improve Customer Service: Evaluating the Impact of Strategic Opportunities," *Journal of Quality Assurance in Hospitality and Tourism* (5:1/2), 2005, pp. 3-26; Piccoli, G., O'Connor, P., Capaccioli, C., and Alvarez, R. "Customer Relationship Management – A Driver for change in the Structure of the US Lodging Industry," *Cornell Hotel and Restaurant Administration Quarterly* (44:4), 2003, pp. 61-73; Piccoli, G., Spalding, B. R., and Ives, B. "The Customer Service Life Cycle: A Framework for Internet Use in Support of Customer Service," *Cornell Hotel and Restaurant Administration Quarterly* (42:3), 2001, pp. 38-45.

5 For simplicity, we constrain the focus of this article to direct relationships between a firm and its customers—first-order effects—without addressing the role of second-order effects such as word-of-mouth marketing, the "evangelist" effect, or brand building. Note, however, that being able to measure and harness such second-order effects is predicated on the same attention to data capture and analysis described in this article.

Figure 1: A Four-strategies Framework for Exploiting Customer Data

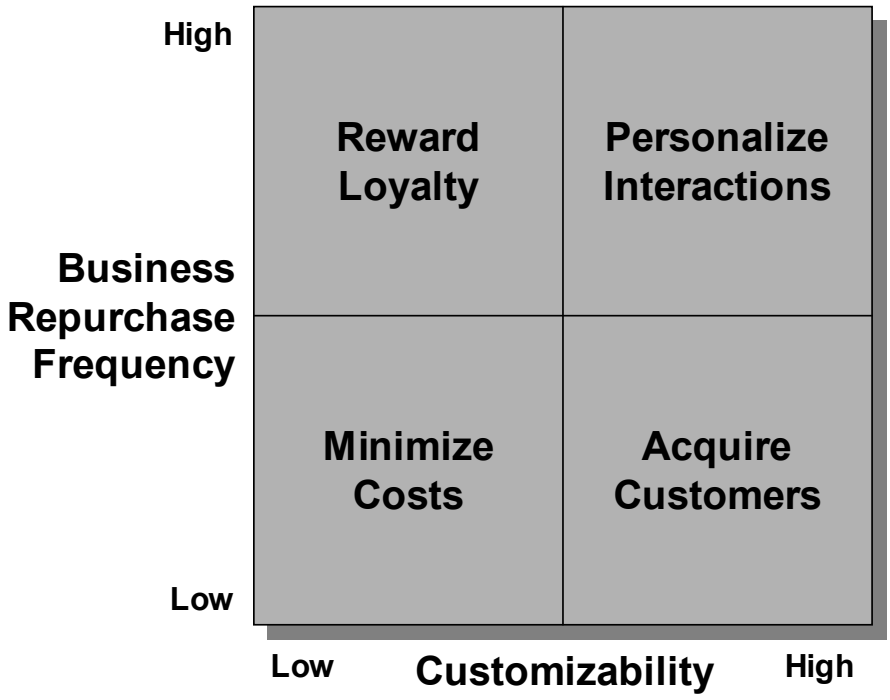

Figure 2: Cost Minimization at OHANA[6]

OHANA Hotels and Resorts, the mid-scale brand of Hawaii-based Outrigger Enterprises Group, is a successful chain of hotels managing seven properties on the Hawaiian island of Oahu and in Guam. Previously branded as Outrigger Properties, these hotels were rebranded in the late 1990s in an effort to bring clear positioning to Outrigger's varied portfolio.

In the words of President and CEO David Carey, "We had huge variation in the portfolio—if you stayed at a budget property vs. a beach-front property, you'd be very confused as to what an Outrigger was." The rebranding makes the value proposition very clear. With average daily rates of just $66, OHANA provides budget-conscious travelers with a clean, consistent, no frills product that allows them to extend their "vacation in paradise" by saving on their accommodation. The firm clearly articulates this notion by positioning itself as "a window on an experience" rather than the experience itself. In other words, OHANA allows people to experience Hawaii by providing the base for their exploration.

While the OHANA product is competitively priced, reaching the Hawaiian islands is still expensive and time-consuming, requiring at least a five-hour flight and an extended stay. As a consequence, OHANA can only expect a relatively low repurchasing frequency and a long repurchase cycle.

By definition, the OHANA product is very simple and minimally customizable. While clean and populated by friendly staff, the typical OHANA hotel is akin to a Holiday Inn, with a limited range of services. As a consequence, when the CRM and personalization craze swept the industry in the early 2000s, OHANA's leadership carefully considered this option but decided against it. The leadership team recognized that the firm would face difficulties in collecting extensive personal and transactional data and that little could be done with the data even if it was collected. Instead of investing in the infrastructure, training, and operation of a customer-data strategy, OHANA opted to maintain its focus on efficient operations and consistent delivery, and to continue using competitive prices as the tool to tip the customer value proposition in its favor.

6 For more details, see Piccoli, G., op cit., 2005.

Firms that fall into the Minimize Costs quadrant of the framework will benefit most from data collection and analysis aimed at finding ways to reduce costs. Cost allocation and reporting systems, for instance, will help such firms to fine-tune their revenue-management and price-optimization strategies.[7] The experience of OHANA Hotels and Resorts is representative of this strategy in the hospitality industry.

2. Reward Loyalty

A rewards strategy for exploiting customer data is appropriate when a firm's products and services are purchased frequently, the products or services are fairly standardized, and it is difficult to tailor them to specific customers' needs. Such a firm can use customer data to evaluate the profitability of each customer—actual and potential—and use this information to reward behavior in an effort to increase customer loyalty, create switching costs, or boost its "wallet share."[8]

The firm can also use data collected about individual customers to generate accurate reports and improve its operations (e.g., grocery stores analyzing the contents of a customer's basket). Note that this requires an understanding of individual customers' profitability as well as their propensity to repurchase without incentives, which means the Reward Loyalty strategy is more complex and sophisticated than the "buy one get one free" approach that many firms seem to settle on.

Passenger air transportation is a classic example of an industry in this quadrant. The well-known experience of Harrah's Entertainment is also typical (see Figure 3).

Figure 3: Rewarding Loyalty at Harrah's Entertainment

Harrah's Entertainment is the largest casino company in the United States, in large part thanks to the decision made 10 years ago to proactively focus on rewarding customers.[9] Through its well-known Total Rewards loyalty points program, Harrah's has been able to collect extensive behavioral data about its customers' gambling behavior. Harrah's executives realized very early on that a modern slot machine is a digital computer, capable of recording and transmitting in real time and with complete accuracy all the transactions it performs. Providing customers with a card enables the firm to link a name to these transactions, thereby monitoring behavior over time.

Armed with this infrastructure for collecting customer data, Harrah's is able to extract value from the data. For the average gambler, Harrah's core customer, the gaming product isn't easily customizable. For example, all dedicated slot machine players experience the same feeling of anticipation and excitement when they play, and the firm has little ability to tailor the gaming experience for each of them. On the other hand, avid gamblers play very frequently—often several times a week.

Having deployed its points program, Harrah's is able to reward avid gamblers with dedicated offers as well as allowing them to receive preferential treatment (e.g., skip the buffet line). Privileges such as these create incentives for players to consolidate their gaming at Harrah's, rather than spread their gaming budget over multiple brands. Moreover, Harrah's ability to track players' behavior enables it to proactively measure responses to different types of incentives, thus improving its ability to offer meaningful rewards.

Perhaps the most interesting insight from Harrah's experience is its use of what we call *pre-emptive rewarding*. Because of the inherent characteristics of gambling, particularly slot machine gaming, after accumulating enough transactional data from past guests, Harrah's can quickly and accurately estimate a customer's *future* value within minutes of the player joining the program. The calculation of future value is based on demographic data collected when the customer signs up for the program as well as on transactional data such as rate of play, type of games played, and the like. This enables the casino to start treating the customer according to his or her future value (i.e., to provide pre-emptive rewards) rather than having to wait for observed play before starting to provide rewards.

7 For more information, see Cross, R. G. *Revenue Management: Hard-core Tactics for Market Domination* (1st ed.), Broadway Books, 1997.

8 A business's wallet share is a measure of how much customers spend with it rather than with competitors.

9 For more information, see Rajiv, L., and Carrolo, P. M. "Harrah's Entertainment Inc.," Harvard Business School Case (Product Number 9-502-011), 2001.

3. Personalize Interactions

A service-personalization or product-customization strategy is most appropriate for firms where the potential repurchase frequency is high and a high degree of customizability is the norm. Under these conditions, it is possible to collect significant data about individual customers because of the repeated interactions the firm has with returning customers. Moreover, because of the high degree of potential product customization, management has many opportunities to use this data to tailor the product or service to the specific needs—learned or inferred—of returning customers. Thus the firm can use customer data to modify its operations and differentiate its products or services.

The Ritz-Carlton's use of the CLASS system provides a prime example of the Personalize Interactions strategy for exploiting customer data in the hospitality industry[10] (see Figure 4). Another industry that would fit in this quadrant of the framework is event planning, particularly firms that work closely with customers who need many recurring events to be organized (e.g., large investment banks).

4. Acquire Customers

Much conventional thinking about strategies for exploiting customer data seems to imply that such data is not useful for firms with little prospects for repurchase (i.e., repurchase frequency is potentially low). Such myopia misses a key opportunity for firms

Figure 4: Personalization at The Ritz-Carlton

The Ritz-Carlton is an international chain of luxury hotels that aspires to provide the "finest personal service and facilities."[11] With its emphasis on tailored service and attention to detail, The Ritz-Carlton has been cited over the years as an exemplar of personalized service.

The Ritz-Carlton, owned by Marriott International, comprises 70 hotels in 23 countries, with 21 more due to open by 2011. Each hotel has access to a centralized database of guest preferences and transactions. The database was originally introduced in 1996, when guest-facing employees carried a pen and notepad on which they would discretely annotate observations about the preferences and interests of guests with whom they came into contact. For example, if a guest called the concierge and mentioned that he wanted only single-malt scotch whiskey available in the bar in his suite, a note would be made. That note would then be input into that hotel's guest database so that single malts would be stocked on the guest's next visit. Other common remarks range from "provide golf balls" to "ensure the room is deep cleaned" to "do not ask guest for her address."

As the chain grew, and it became feasible to create a centralized database of guest preferences, the data from each individual property was made available to all hotels in the chain. Today, employees use a hotline to communicate their observations rather than carry notepads.

To deliver the finest personal service though, it is not enough to anticipate guest needs and provide items guests are likely to request. It is also important that guests' interactions with staff are equally customized and rewarding. For this reason, every day at a Ritz-Carlton hotel begins with a meeting of guest-facing personnel where the "guest recognition daily" is distributed. This document, in the form of a small booklet, lists all the expected guests, their length of stay, the number of previous stays at that hotel, and the number of previous stays with The Ritz-Carlton chain, as well as a list of observed past preferences and comment/action items. The purpose of the guest recognition daily is to enable every employee who is likely to come into contact with guests to be able to appropriately interact with them on a personal basis.

For over a decade, The Ritz-Carlton has consciously positioned its product as a unique, tailored experience. But its ability to do so depends on the fact that its best customers visit its hotels often enough for employees to build deep profiles and preference lists on which they can act. In other words, The Ritz-Carlton's personalization strategy is predicated on a significant repurchase rate and a high degree of customizability that enables its employees to tailor the product to the individual needs and preferences of each guest.

10 See Sasser, E. W., Jones T. O., and Klein N. *Ritz-Carlton: Using Information Systems to Better Serve the Customer,* Case #395064, Harvard Business School Publishing, 1994.

11 See "Gold Standards" (http://corporate.ritzcarlton.com/en/About/GoldStandards.htm).

with low repurchase frequency but a high degree of product or service customizability to acquire new customers.

With the Acquire Customer strategy for exploiting customer data, a firm collects exhaustive data about its current customers. This data is analyzed to create customer profiles based on an evaluation of profit margins at the different profit centers where customers transact business, and to develop models to identify and attract new profitable customers while avoiding non-profitable and marginal ones. The availability of such deep business intelligence becomes all the more important during slow periods when marketing budgets get slashed and efficiency in attracting new profitable customers becomes paramount.

The wedding reception business is a good example of a segment that falls in the Acquire Customers quadrant of the framework. Such firms offer highly customizable experiences but typically have low repurchase frequency. Their offerings are also highly seasonal and cannot be scaled (e.g., it is not possible to host simultaneous receptions in one facility). It follows that a successful wedding hall should pay careful attention to the type of customer it attracts. In other words, the optimal strategy for a wedding reception firm is to clearly understand profit margins and customer segments so it can give priority to customers most likely to purchase a bundle of services (e.g., catering, flowers, entertainment) that maximizes its profits. It should use data analytics to build a profile of the most profitable customers and then focus on improving its success rate in recruiting such customers. Carnival Cruise Lines provides an example from the hospitality industry (see Figure 5).

USING THE FRAMEWORK TO DEVISE A COMPREHENSIVE STRATEGY

Most businesses have many types of customers, some recurrent and some infrequent or one-off, and it is therefore hard to unequivocally place a firm into one of the quadrants. But the four-strategy model provides an analytical tool that can help a firm evaluate the advantages and disadvantages of each of the four strategies and, more importantly, the natural fit of each strategy to the firm's characteristics.

Firms should identify which quadrant (or quadrants) of the framework they currently fit into and decide where they want to be. For example, we have used the framework to help a newspaper publisher (low repurchase frequency, because of its subscription model, and low customizability) rethink its value proposition. The framework helped the company realize that its core asset, a database of new stories, could support on-demand delivery of personalized preselected news categories (e.g., international business news and local sports results) in voice format to a cell phone during the morning or afternoon commute. Thus the firm is morphing its flagship product into an on-demand news delivery service characterized by high repurchase frequency and high customizability. This shift will enable the publisher to exploit a personalization strategy that creates both a superior value proposition and stronger relationships with customers over time.

Note, however, that the positioning of a specific firm within the framework represents a "field of opportunity" rather than the only strategy available to the organization. For example, a firm with significant levels of potential repurchase frequency and highly customizable products can obviously adopt a personalization strategy. Yet, given its ability to collect multiple data points about the same customers, it could also follow a rewards strategy. Conversely, a firm in the Reward Loyalty quadrant cannot adopt a personalization strategy as its products are too constraining to make such a strategy feasible.

Organizations whose field of opportunity spans multiple quadrants of the framework should pay particular attention to prioritizing the four possible strategies for exploiting customer data. For example, a firm in the top right quadrant (high repurchase frequency and high customizability) could conceivably engage in all four strategies. Yet a strong commitment to one of them may be most appropriate.[12]

Firms should pay special attention to potential repurchase frequency when considering their mix of product or service offerings. Resource constraints mean that a business cannot be all things to all people, and designing and launching a new product, service, or initiative usually requires high upfront investments. Firms should therefore look at the potential for payoff over the entire customer base (or a large proportion of it) so that the fixed cost can be spread across a large number of customers. In other words, there is no point in gearing up for personalization (creating the systems and processes, training people, and so on) unless the personalization strategy can yield an adequate return. This will be achieved only if personalization is used by a large number of customers or a limited percentage of

12 For more information, see Ghemawat, P. *Commitment: The Dynamic of Strategy*, The Free Press, 1991.

Figure 5: Customer Acquisition at Carnival Cruise Lines[13]

Carnival Cruise Lines is one of the world's dominant cruise operators, carrying over three million passengers in 2007 on its 22 "Fun Ships."[14] With a growing fleet, including many new ships carrying in excess of 3,000 guests and 2,000 crew, Carnival targets its "floating resorts" at almost every demographic. As Carnival's President and CEO Bob Dickinson put it: "We try to position ourselves in the mainstream vacation market. We're the Fun Ships. We're for Everyman with a capital E."

The sheer degree of complexity and multifaceted operations of a modern cruise ship are what enables each guest to have a different experience by defining what they want the "Fun Ship" to be. Guests can spend time—and money—at countless bars, the many on-board shops (including duty-free), the spa, art auctions, wine tastings with the sampled vintages for sale, airbrush art, Internet cafes, video arcades, golf simulators, casinos, shore excursions, ship-to-shore telephones, laundry, and the ship's photo gallery. As well as on-board spending and excursions, guests can chose from various accommodation levels and, before they even sail, can select different routes and ports of call. The huge number of options provides a significant degree of customizability of the cruise product.

However, the potential repurchase frequency of cruise products is low. While there are a few devoted cruisers that produce significant volume, Carnival estimates that only 20% who have cruised with the brand return more than once in the following seven years. The pattern of repeat purchases is shaped like a hockey stick, with low repurchase frequency and long repurchase cycles (e.g., a honeymoon cruise followed by a tenth anniversary voyage). With customers typically very satisfied with the cruise experience, the reasons for low repurchase frequency are structural. Even cheaper cruises are expensive and time-consuming, as they include airfare and transfers, over and above the average $1,651 price tag for a seven-day trip.

Carnival maintains a conservative stance toward new information systems initiatives, which its status as one of the largest and most successful cruise lines enables it to do. However, it has now been collecting and storing voyage detail data for five years. This data is particularly precise as modern cruise ships are cashless; all transactions are completed using magnetic stripe cards. Carnival's "Sail and Sign" card enables precise tracking of all transactions at an individual level. The data collected via the cards therefore enables Carnival to create accurate models of the spending patterns and profitability of past customers. Although the data may be of little value in helping Carnival to increase loyalty and persuade those who have cruised before to return, it should enable the firm to target appropriate prospects. The data can be used to estimate the potential profitability of future customers and therefore enable a conscious customer-acquisition strategy that improves both marketing efficiencies and financial performance.

customers who account for the majority of the firm's profits.

LESSONS LEARNED

The cases we have cited, which are all from the hospitality industry, suggest that forward-thinking organizations now pay significant attention to the data that their transaction processing systems generate during the normal course of business. Rather than aggregating or disposing of that data when transactions have been completed, they are increasingly saving it and devising ways to extract value from it. But the cases also illustrate there is a shift away from capturing customer data as a byproduct of transaction processing systems toward a forward-looking data-capture strategy and proactive analysis of the data.

Yet, even these organizations have not fully embraced the born digital approach. Much of the data they use is still produced as a byproduct of existing systems rather than being based on an infrastructure crafted for capturing critical customer data in digital form at its inception.

ADOPTING THE BORN DIGITAL APPROACH

A born digital strategy requires a disciplined approach to digital data capture, predicated on the recognition of the value of customer data and the consequent need to architect systems that originate

13 For more details, see Kwortnik, R. J., Piccoli G., and Applegate L. M., op cit., 2005.

14 Source: Cruise Industry News (2007) International Guide to the Cruise Industry, 20th edition.

critical customer data in a digital form. Although we have focused on the hospitality industry, we believe that many other organizations in a wide variety of industries could gain significant benefits from adopting the born digital approach and that the time is now right to do so. Customer service interactions are increasingly computer-mediated both online (e.g., e-commerce transactions) and offline.[15] Every computer-mediated customer service transaction where digital identification of the customer occurs (e.g., a log-in, a swipe card, a customer number) provides an opportunity to capture data. The trend toward computer-mediated customer service is likely to accelerate with the increasing use of mobile technology and the high degree of accessibility and proximity it provides.

The pervasive and affordable network infrastructure ushered in by the Internet provides the second catalyst for the born digital approach. This infrastructure makes it feasible for organizations to develop complete and centralized data stores of their customers' interactions, regardless of the touch point or where in the world they occurred. Organizations are thus creating the prerequisite for profiting from customer information.

Decisions about collecting born digital customer data should be driven by the desire to seamlessly and unobtrusively collect data that answers six basic questions about a transaction:[16]

1. When did the transaction take place (e.g., time and date)?
2. Where did the transaction occur (e.g., store address, touch point)?
3. What was the nature of the transaction (e.g., product purchased)?
4. How was the transaction executed (e.g., company gift card)?
5. Who initiated the transaction (e.g., customer id)?
6. What was the outcome (e.g., value of the sale, satisfaction)?

A good example of the advantages of adopting the born digital approach is provided by the newest multibillion-dollar resort casino in the U.S.—Wynn Las Vegas. Historically, casinos have not placed significant value on customer data. Until the recent publicity given to Harrah's innovative CRM and BI practices, a large casino's standard operating procedure was to value customers on the basis of judgments made by hosts and pit bosses. This unscientific approach tended to give undue weight to the contribution of a few big gamblers—the so-called whales—while under-valuing the multitude of smaller, but often more profitable, players. With the advent of state-of-the-art digital slot machines, it became feasible and cost-effective to build comprehensive profiles of avid slot machine players, without disrupting their play or experience, and craft a targeted rewards strategy.

Casinos are now expanding their use of technology to capture valuable customer data, by embedding radio frequency identification (RFID) transceivers in the chips used at table games. With this approach, a casino can track individual gambling behavior in real time and with the same precision as slot machine usage. Historically, those casinos wishing to place a value on table games players had to use a labor-intensive monitoring system that required pit bosses to note approximate amounts wagered, a process neither simple nor precise. By some estimates, many casinos still provide table games players with incentives that exceed their worth by 20% to 30%.[17]

Embedding RFID transceivers in chips means that table games data is recorded in an easily storable and retrievable format without interfering with the customer's enjoyment. The key insight here is that there are no tangible operational advantages associated with deploying RFID-enabled table game chips. They look and behave like traditional chips, and transactions (i.e., table play) are not affected. The value proposition is rooted purely in the recognition that digital data capture is frequently a prerequisite to the operational and financial feasibility of a comprehensive customer-centric strategy.

Note that in advocating the born digital approach we are not criticizing the historical attention given to the re-use of data created as a byproduct of transaction processing systems. Rather, it is an extension of this tradition. We still urge managers to seek out nuggets of valuable data buried and forgotten in transaction processing systems. But we also advocate that they should take a more proactive approach which ensures valuable data are born digital. The infrastructure and technologies to enable this shift are largely in place. A change in mindset is the biggest obstacle that remains.

15 See Froehle, C. M. "Service Personnel, Technology, and Their Interaction in Influencing Customer Satisfaction," *Decision Sciences* (37:1), 2006, pp. 5-38.

16 See Watson, R. T. *Data Management: Databases and Organizations* (5th ed), 2006, Wiley p. 450.

17 Gilbert, A. "Vegas casino bets on RFID," September 6, 2007, http://news.com.com/Vegas+casino+bets+on+RFID/2100-7355_3-5568288.html.

OBSTACLES AND PITFALLS TO WATCH OUT FOR

A strong word of caution is necessary at this point. While capturing data in digital form does indeed provide a wealth of opportunities to forward-looking firms, several potential obstacles and pitfalls remain. First and foremost, the potential for privacy violations increases tremendously in the born digital world.

In addition to privacy concerns, organizations must manage customer perceptions about their objectives in capturing data in a digital form. The now (in)famous example of RealNetworks' popular RealJukebox software illustrates the dangers.[18] This firm was accused by privacy advocates of surreptitiously collecting information about the CDs customers listened to. Although RealNetworks claimed its intention was to provide better entertainment options for its customers and pointed out that listeners could simply uncheck the tracking option, the perception of misuse and ill-will were all it took for a backlash to occur. Sony BMG made an almost identical mistake in 2005 when it surreptitiously installed a rootkit[19] on the computers of customers purchasing Sony BMG music CDs as part of its approach to Digital Rights Management.

These examples illustrate that, in a world of increasingly available digital customer data, it is imperative that a firm acts transparently in its interactions with customers in order to avoid even the slightest suspicion of misconduct.

Firms also need to consider the impact of any security breaches involving customer data held in a digital form. With the proliferation of digitized customer data, much of it potentially sensitive, a priority for firms that seek to implement data-driven customer strategies must be to develop the procedures, culture, and skills of high-quality customer information stewardship.

ACTION CHECKLIST

We offer the following action checklist for identifying strategic opportunities for exploiting customer data and for adopting the born digital approach:

1. Identify which of the data-driven customer strategies are suitable for your firm by assessing your product or service portfolio in terms of repurchase frequency and customizability.
2. Evaluate the degree of current digital origination of the needed data. You will likely discover that your firm already has the potential to produce significant insights about customer preferences and behaviors.
3. Determine what technologies you need to capture relevant customer data at its inception point and how the investment can be justified. Like many hard-to-justify infrastructure projects, the technology needed to support the born digital approach can often be embedded in specific projects.
4. Continually scan the IT marketplace for new technologies or price declines in existing technology that enable customer-convenient and low-cost digital data capture. Constantly question the state-of-the-art in your industry for capturing data in a digital form in the light of technology improvements and innovations.
5. Pay attention to privacy and security concerns. Ensure that customers know that data is captured in a digital form and understand what it will be used for.

We encourage managers to use the ideas presented in this article to both surface and evaluate potential initiatives. Firms can use the four-strategy framework to bridge the current chasm between the wealth of data generated by the increasingly pervasive computerized infrastructure in many businesses and the lack of guidance that has historically held managers back when it comes to exploiting data.

We all acknowledge, often with a robotic nodding of heads, that data is a valuable resource but do little about it. The born digital era now beginning enables resourceful managers to apply analytic frameworks and software to improve profitability by exploiting customer data.

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18 See Macavinta, C. "RealNetworks faced with second privacy suit," http://news.com.com/RealNetworks+faced+with+second+privacy+suit/2100-1001_3-232766.html.

19 A rootkit is a collection of software that enables administrator-level access to a computer or network.

Cases, published by John Wiley & Sons. His research, teaching, and consulting expertise are on strategic information systems and the use of information systems to enable superior customer service.

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