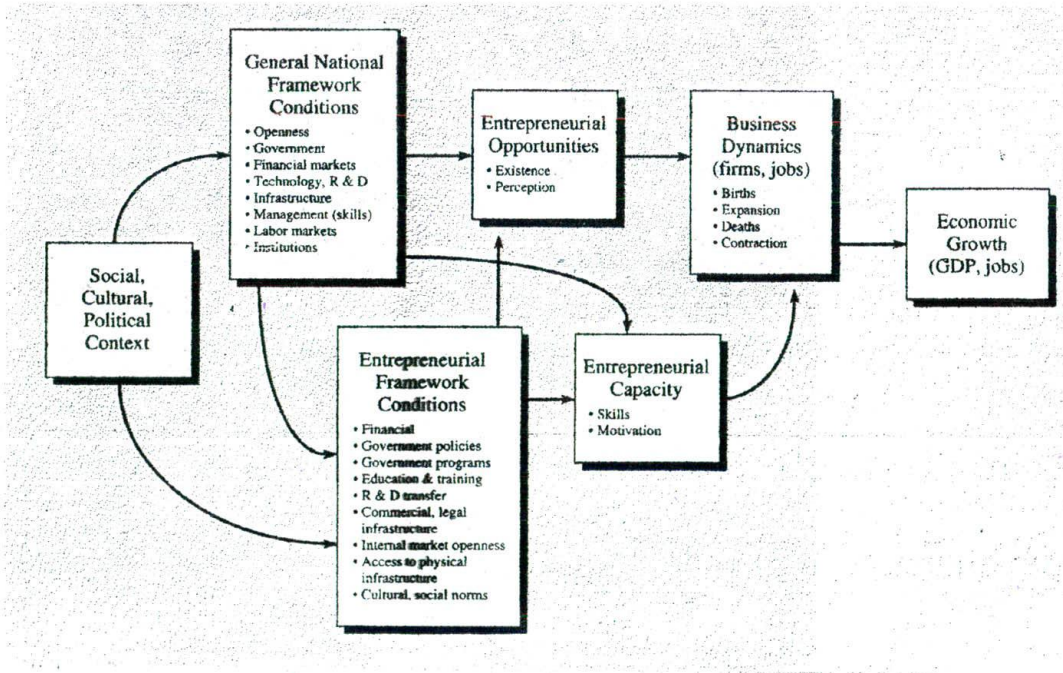
A GEM of a Study

What government policies and initiatives are most likely to generate high levels of entrepreneurial activity? Which are positively correlated with the economic well-being of a country as measured by growth in GDP and job formation? Project directors of the Global Entrepreneurship Monitor (GEM), who define entrepreneurship as "any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business," suggest the following:

- Promoting entrepreneurship, especially outside the most active age group (25–44), with specific programs that support entrepreneurial activity.

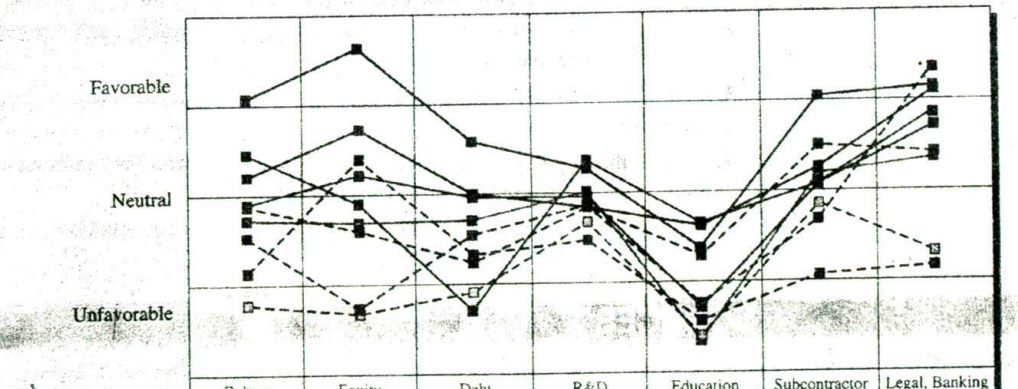
EXHIBIT C-GEM 1–1 Conceptual Model: The Entrepreneurial Sector and Economic Growth



- Facilitating the availability of resources to women to participate in the entrepreneurial process.
- Committing to long-term, substantial postsecondary education, including training programs designed to develop skills required to start a business.
- Emphasis on developing an individual's capacity to recognize and pursue new opportunities.
- Developing the capacity of a society to accommodate the higher levels of income disparity associated with entrepreneurial activity.
- Creating a culture that validates and promotes entrepreneurship throughout society.

Researchers at the Kauffman Center for Entrepreneurial Leadership (Babson College) and the London Business School revealed these propositions based on a study designed to prove a causal relationship between factors that affect entrepreneurial opportunities and potential, to business dynamics and national economic growth and well-being. The research design compensated for lack of control of extraneous variables by using data from 10 nations "with diversity in framework conditions, entrepreneurial sectors, business dynamics, and economic growth." The longitudinal study proposed to prove or disprove a new conceptual model of cultural, economic, physical, and political factors to predict economic growth (Exhibit C-GEM 1–1).

EXHIBIT C-GEM 1–2 **Entrepreneurial Framework Conditions: Cross-National Comparisons of Key Informant Multi-Item Indexes**



	Culture	Equity	Debt	R&D	Education	Subcontractor	Legal, Banking
U.S.	0.8	1.23	0.44	0.21	-0.46	0.8	0.88
Canada	0.15	0.55	0	-0.12	-0.28	0.22	0.86
Israel	0.34	-0.06	-0.97	0.29	-0.26	0.04	0.67
U.K.	-0.07	0.17	-0.03	-0.02	-0.97	0.08	0.57
Germany	-0.2	-0.22	-0.21	0.03	-1.24	0.15	0.29
Denmark	-0.09	-0.3	-0.56	-0.12	-0.52	0.39	0.33
France	-0.92	1.01	-0.81	-0.23	-1.21	-0.1	-0.49
Japan	-0.65	0.29	-0.52	-0.39	-1.06	-0.68	-0.61
Finland	-0.36	-0.94	-0.33	-0.1	-0.94	-0.22	1.03
Correlation to Start-Up Rate	0.87	0.79	0.58	0.69	0.65	0.71	0.55

Various data collection methods were employed, including:

- Current, nonstandardized data collected by each national research team.
- Two rounds of adult population surveys (1,000 randomly selected adults per country) to measure entrepreneurial activity and attitude, completed and coordinated by an international market survey firm by phone—or face-to-face in Japan. (Market Facts [Arlington, VA] did the first round of data collection in June 1998 [Canada, Finland, Germany, the United Kingdom, and the United States]. Audience Selection, Ltd. [London] conducted the second round in March 1999 from all 10 countries.)
- Hour-long personal interviews with 4 to 39 experts (key informants) in each country.
- Detailed 12-page questionnaire completed by each key informant.

The perception of opportunity (.79) and the two measures of entrepreneurial potential of the population—capacity (.64) and motivation (.93)—positively correlate with business start-up rates. And start-up rates positively correlate with growth in GDP (.60) and level of employment (.47).

While many cross-sectional measures still remain in this ongoing study, study directors claim, "The support for the conceptual model is encouraging, although clearly not conclusive. GEM provides a robust framework within which national governments can evolve a set of effective policies for enhancing entrepreneurship."

Questions

1. What are the independent and dependent variables in this study?
2. What are some of the intervening, extraneous, and moderating variables that the study attempted to control with its 10-nation design?
3. Can you do a causal study without controlling intervening, extraneous, and moderating variables?
4. What is the impact on study results of using national experts (key informants) to identify and weigh entrepreneurial framework conditions?
5. Can you do a causal study when much of the primary data collected is descriptive opinion and ordinal or interval data?

SOURCES

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AgriComp



"How do I make sense of all this?" asked Jody, as he prepared to write his report to the dealer relations committee. He stared at the 292 responses to a survey of AgriComp's dealers as he began to ponder the problem. The question was whether to recommend a change to AgriComp's current procedures for settling warranty claim disputes with its dealers.

AgriComp sold computer systems to farmers, who used the systems for such purposes as crop rotation planning and spreadsheet analysis for financial planning. Many also used the systems to provide remote access to agriculture-oriented databases, market news, and even weather information. The equipment was assembled at company headquarters in southern Minnesota. The software was provided by subcontractors but was distributed under AgriComp's name. Both the hardware and software were sold through some 350 affiliated dealers nationwide, 292 of whom had responded to Jody's survey. It was relations with these dealers that concerned him.

The local dealers handled warranty service for AgriComp products. When hardware or software problems occurred, they arranged for appropriate repairs to be made locally and submitted vouchers to AgriComp headquarters in Minnesota. The headquarters staff reviewed the vouchers and issued reimbursement checks to the dealer. Occasionally claims were denied when the staff found that the particular repair was not covered by the company's warranty or the warranty had expired. In such cases, the dealer was more or less stuck for the cost of the repairs, and this had caused occasional hard feelings.

The company had an internal appeals process for dealers to follow to protest such denials but, at the last dealers' meeting, Jody had heard a lot of grumbling about that process. More than one dealer had suggested that it was useless, as appeals were always denied. For the dealers, the costs of repairs might correspond to the profits on many systems, so their concern was understandable.

Jody knew that clearer warranty instructions would help. Sometimes the dealers couldn't understand exactly what was or wasn't covered by warranty. In that kind of case, they often arranged for the repairs (to keep the customer happy) and took their chances on reimbursement. New documentation currently being developed would probably help with that part of the problem.

This case was inspired by an actual survey taken during 1993, but we have disguised the nature of the organization and its products, as well as the particular issue in the survey.

In a corridor conversation at the dealers' meeting, one dealer had suggested that perhaps in cases of dispute, an impartial mediator, external to the company, might be called in to settle the matter. In the annual survey of dealers, Jody had included a question about that proposal. As part of a one-page survey, dealers were asked to respond to the statement "The warranty appeals process should be replaced by a process using impartial mediators," on a scale of 1 to 5, where 1 indicated "Strongly agree," 3 indicated "Neither agree nor disagree," and 5 indicated "Strongly disagree." Each dealer was also asked to give the number of times in the last three years in which he or she had used the warranty appeals process. Answers to this question were 0, 1, 2, and "3 or more."

Part of the data from that survey is contained on the accompanying CD in the file AGRICOMP.

Jody was willing to consider changing the warranty appeals process along the lines suggested, if it was important to the dealers. It would cost the company some money, both for the external mediator and (perhaps) for increased costs from appeals the company lost, but keeping the dealers happy was obviously important.

Variable	Label
REP	The dealer's support for replacing the existing warranty appeals system with a mediator system (1 = "Strongly agree," 3 = "Neither agree nor disagree," and 5 = "Strongly disagree").
USE	The number of times the dealer used the appeals process (3 = 3 or more).

Question

1. Jody wonders just how important the process is to the dealers. Was there widespread discontent, or had he just heard from a few malcontents at the dealers' meeting?

Source: Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

AIDS Rates for Females



Early reports of Pneumocystis carinii pneumonia, Kaposi's sarcoma, and other opportunistic infections in young homosexual men in Los Angeles, New York City, and San Francisco were filed in 1981. At that time, the Centers for Disease Control and Prevention (CDC) began surveillance for a newly recognized constellation of diseases, now called the acquired immunodeficiency syndrome (AIDS).

HIV, the etiologic agent of AIDS, has been identified and diagnostic tests for infection with this virus have been developed. Exact definitions of AIDS and diagnostic practices have changed over time. State and local health departments report cases of AIDS to the CDC, but they vary widely in the structure and organization of their surveillance systems and, therefore, in the completeness of their case reporting. Reporting delays vary widely, too, and have been as long as several years for some cases. Generally, between 50 percent and 60 percent of patients are reported to the CDC within three months of diagnosis, about 80 percent within one year, and about 90 percent within two years.

AIDS has become a major public health issue, and the expense of treating cases has led insurance companies to require screening in some cases before issuing life and health insurance policies. This in turn has led to concerns about privacy. AIDS is, thus, an economic and political issue for businesses and private citizens alike.

In the early years of the pandemic, AIDS was not generally considered a big issue for women, because the overwhelming majority of the cases reported were in homosexual males. Is that still the case?

The data on the accompanying CD show the number of new AIDS cases reported in various years for adult and adolescent females. From these data, prepare an appropriate chart or other summary that highlights the salient features of the data and makes evident any important trends.

Source: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, *AIDS Public Information Data Set*, July 1991. Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

BBQ Product Crosses Over the Lines of Varied Tastes

Rich Products Corp. is hoping its frozen barbecue will appeal to the wide tastes in its narrow market, but it realizes consumers will need a nudge in that direction.

Enter Ruby Taylene Dodge, waitress down at the Port-O-Rama and major figure in the company's marketing campaign for its new product, Rich's Southern Barbeque.

Barbecue is a regional delicacy; it varies in taste from county to county throughout the Southeast. According to Joe Tindall, the company's product development manager of new products, Rich Products (Buffalo, New York) had to develop a tangy product to appeal to varied tastes and had to persuade consumers they'd like it.

To cross over regional and local differences in the six-city market in the Southeast, Long, Haymes & Carr Advertising (LH&C), Winston-Salem, North Carolina, has launched a series of 30-second TV ads called "Please Don't Tell 'Em Ruby Sent You."

"The fictitious Ruby is supposed to give the product authenticity without trying to compete with barbecue restaurants or stands," said Don Van Erden, vice president/management supervisor, LH&C.

"Our research told us that no one has more rapport and credibility with the barbecue-eating public than the real-life barbecue waitress," Van Erden said. "In Ruby, we have a vivid persona who's believable because she's based on real barbecue waitresses we've observed."

Rich Products hopes Ruby will reach all consumers with her friendly Southern accent and down-home sincerity.

"I'm a loyal employee of the Port-O-Rama, but my real true love is Rich's Frozen Barbeque," Ruby says in one spot. In another she's wearing a disguise. "I can't just go to my grocer's freezer for Rich's Barbeque," she says. "I've got a career at the Port-O-Rama to consider."

She praises the product in all the spots but, fearful of losing her job, warns viewers, "Just please don't tell 'em Ruby sent you."

The microwavable barbecue entrees were test marketed last year in Nashville, Tennessee, Little Rock, Arkansas, and the Alabama cities of Birmingham, Huntsville, Montgomery, and Tuscaloosa. "That's the market now, but expansion into other areas is planned," Tindall said.

Questions

1. What measurement and scaling issues should be considered when developing a study to measure consumers' attitudes toward barbecue in general and, specifically, Rich's Southern Barbeque?
2. Assume Rich's wanted to test people's preference for its barbecue versus the other leading brands (of which there are five). What would you recommend to measure these preferences?
3. What measurement and scaling issues should be considered when developing a study to measure the effectiveness of "Ruby" as a character spokesperson for Rich's Southern Barbeque?

Source: "BBQ Product Crosses Over the Lines of Varied Tastes" (September 12, 1988, p. 24) used with permission of *Marketing News*. Case notes used with permission of William R. Dillon, Thomas J. Madden, and Neil H. Firtle, *Marketing Research in a Marketing Environment*, 3/e, 1994, Irwin. Used with permission of The McGraw-Hill Companies.

Calling Up Attendance: TeleCenter System Users Forum

Nashville-based TCS Management Group markets TeleCenter System, software used to forecast staffing needs for reservation centers, order centers, or customer service centers. Using TeleCenter System allows companies to have the correct number of people on duty at any given hour of the day or night, thereby optimizing the delivery of good

service while holding costs as low as possible. TCS has an impressive list of customers, including American Express, British Airways, Sears, Amtrak, and Citicorp.

TCS was planning a special two-day educational event, Users Forum, for its 300-plus customers, but was unsure how many TeleCenter System users would attend. Scheduled at the Opryland Hotel, the forum would offer speakers, workshops, and presentations. While TCS would underwrite the costs associated with planning the meeting and preparing the presentations, customers would be responsible for paying a fee to attend, as well as their own hotel and travel expenses to Nashville. "Ten weeks before the forum, we weren't sure whether we would have 40 people or 140 people coming to Nashville," shared Jim Gordon, CEO of TCS.

While TCS had previously done most of its own customer satisfaction research, given the time frame of the need, it turned to Nashville-based Prince Marketing, who promised to design, conduct, and interpret survey results within 21 days.

Three objectives were set for the phone survey:

- Determine the likelihood of Users Forum attendance.
- Update the TCS software users database (for subsequent use in mailing quarterly newsletters, special announcements, and software updates).
- Measure the level of user satisfaction (with the company and its software generally, as well as regarding specific software features and issues).

Respondents were asked to rate on a 7-point scale the software's ease of use, the usefulness of software-generated reports, and satisfaction with service. They were also asked whether they would recommend the software and why/why not; whether they were aware of the Users Forum; whether their company planned to send a representative; and whether the customer needed or wanted more information on the Users Forum. Prince faxed the names and addresses of respondents indicating an interest in the Users Forum to TCS, which sent promotional materials immediately.

Prince surveyed 315 customers: 161 users and 154 managers. Prince predicted that 115 people would attend the forum. Actual Users Forum attendance was 139.

On customer service, 34 percent of respondents gave TCS a 7, the highest point on the rating scale. Yet respondents also offered that they wanted shorter response time and longer operating hours for telephone support staff, including Saturday access. TCS CEO Gordon said, "We have redeployed some of our people, expanded Saturday coverage, and instituted a beeper system to increase our responsiveness."

TCS received its lowest scores on ease of use, with 60 percent of respondents giving it a 5 or higher on the 7-point scale, while 16 percent refused to answer. The research confirmed anecdotal evidence and reinforced internal initiatives to improve ease of use.

Fully 84 percent said they would recommend the TCS system to colleagues, with 16 percent indicating they were too new to the software to form an opinion. TCS plans to use this endorsement to attract new users.

"The positive survey results created tremendous esprit de corps for the whole staff," claims Gordon. "We were able to identify these concerns ahead of our Users Forum and develop appropriate responses. All in all, the survey told us we're on the right track—and that alone justified our investment in the research."

Questions

1. Build the management-research question hierarchy.
2. Discuss the communication methodology chosen.
3. Develop the preliminary analysis plan.
4. How would you deal with the 16 percent of the sample who were new to the software?

5. Discuss the advantages and concerns of incorporating or closely linking marketing activities with research activities.

Source: http://www.quirks.com/CGI-BIN/SM40i.exe?docid=3000:58911&%70assArticleID=409. Used with permission of Pamela S. Schindler and Donald R. Cooper. © 2001.

Can This Study Be Saved?

"What's troubling me is that you can't just pick a new random sample just because somebody didn't like the results of the first survey. Please tell me more about what's been done." Your voice is clear and steady, trying to discover what actually happened and, hopefully, to identify some useful information without the additional expense of a new survey.

"It's not that we didn't like the results of the first survey," responded R. L. Steegmans, "it's that only 54 percent of the membership responded. We hadn't even looked at their planned spending when the decision (to sample again) was made. Since we had (naively) planned on receiving answers from nearly all of the 400 people initially selected, we chose 200 more at random and surveyed them also. That's the second sample." At this point, sensing that there's more to the story, you simply respond, "Uh huh . . ." Sure enough, more follows:

"Then E. S. Eldredge had this great idea of following up on those who didn't respond. We sent them another whole questionnaire, together with a crisp dollar and a letter telling them how important their responses are to the planning of the industry. Worked pretty well. Then, of course, we had to follow up the second sample as well."

"Let me see if I understand," you reply. "You have two samples: one of 400 people and one of 200. For each, you have the initial responses and follow-up responses. Is that it?"

EXHIBIT C-CAN 1–1 Methodology Details

	Pilot Study	First Sample	Second Sample	Both Samples	All Combined
Initial Mailing					
Mailed	12	400	200	600	612
Responses	12	216	120	336	348
Average	$39,274.89	$3,949.40	$3,795.55	$3,894.45	$5,114.47
Standard deviation	$9,061.91	$849.26	$868.39	$858.02	$6,716.42
Follow-Up Mailing					
Mailed	0	184	80	264	264
Responses	0	64	18	82	82
Average		$1,238.34	$1,262.34	$1,243.60	$1,243.60
Standard deviation		$155.19	$156.59	$153.29	$153.29
Initial and Follow-Up					
Mailed	12	400	200	600	612
Responses	12	280	138	418	430
Average	$39,274.89	$3,329.73	$3,465.13	$3,374.43	$4,376.30
Standard deviation	$9,061.91	$1,364.45	$1,179.50	$1,306.42	$6,229.77

"Well, yes, but there was also the pilot study—12 people in offices downstairs and across the street. We'd kinda like to include them, average them, with the rest because we worked so hard on that at the start, and it seems a shame to throw them away. But all we really want to know is average spending to within about a hundred dollars."

At this point, you feel that you have enough of the background information to evaluate the situation and to either recommend an estimate or an additional survey. Exhibit C-CAN 1–1 offers additional details for the survey of the 8,391 overall membership in order to determine planned spending over the next quarter.

Questions

1. Was drawing a second sample a good idea? Explain.
2. Were the follow-up mailings a good idea? Explain.
3. Which of the results are useful? Are these data sufficient to solve the management dilemma or is further study needed?

Source: Adapted from "Can This Survey Be Saved?" Used with permission of Andrew F. Siegel, *Practical Business Statistics*, 4/e. (Irwin/McGraw-Hill, 2000), p. 298.

Healthy Lifestyles



The Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, is the government agency responsible for disease-related issues in the United States. The CDC coordinates efforts to counteract outbreaks of diseases and funds a variety of medical and health research studies. The CDC also serves as a central clearinghouse for health-related data.

The CDC conducts the annual Behavioral Risk Factor Surveillance Survey. The survey measures a whole series of lifestyle characteristics that relate to health and longevity, such as smoking and use of seat belts. The survey compiles data on a state-by-state basis. Not all states are surveyed.

The data set from the 1990 Behavioral Risk Factor Surveillance Survey is on the accompanying CD in the file named HEALTHY. All numbers are percentages, and asterisks indicate the missing data for that state.

Variable	Label
SMK	Current cigarette smokers.
WEI	Overweight (top 15 percent of population, according to the CDC height-weight formula).
SED	Sedentary lifestyle (less than three 20-minute exercise sessions a week).
ACT	No leisure time activity (off the job).
ALC	Binge drinking (five or more drinks on occasion, previous month).
DWI	Drinking and driving (after "too much" to drink, previous month).
SEA	Seat-belt use (occasionally or never).
STATE	U.S. state (alphanumeric).

Your task is to prepare a summary of these data. Your report is to be issued to major news organizations, such as the Associated Press, and will appear in major newspapers around the United States. For this reason, it would be inappropriate to use technical jargon in your report.

Your boss has suggested a few general ideas about what is likely to appeal to your target audience. As you study the data, you might find other things worth including.

Questions

1. Report any interesting (i.e., unexpected, humorous, or odd) differences between states.
2. Devise a weighted index of all seven lifestyle variables. The weighted index is to serve as an overall or composite measure of healthy lifestyles. Apply your weight to the states of Minnesota, Florida, and California as an example of what your weighted index shows.
3. Discuss any noteworthy limitations of the survey or data set.

Source: Used with permission of Peter G. Bryant and Marlene A. Smith. *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

HiTech Engineering



HiTech Engineering, Inc. (HEI), a company located in Minnesota, designs and manufactures a variety of industrial products. HEI sells its products directly to existing customers and also uses authorized distributors around the globe to assist in sales and distribution. Although HEI has an edge on the market in terms of engineering and manufacturing expertise, it falls a bit short in knowing the best way to market and sell its latest industrial inventions and innovations.

HEI gets word to the market about a new product in various ways. For instance, sometimes it purchases magazine advertisements and sometimes it issues news releases. Because HEI produces industrial products and not consumer products, it never uses broadcast media such as television or radio, but concentrates on print media for the purpose of advertising.

HEI management would like to understand how effective each of the five basic types of advertising they've used has been.

1. **Magazines** (MAGS). Advertisements are placed in about 150 different industrial magazines and trade journals. These ads are designed by HEI's advertising department.
2. **Postcard decks** (POST). Publishers of various magazines and journals assemble postcard announcements of new products from a number of different companies. The postcard decks are then sent out to their list of subscribers. HEI must pay for the postcard deck service.
3. **Editorials** (EDIT). HEI's advertising department occasionally produces editorials for magazines or trade publications and hopes that the editorial will be published. In response to the editorial, readers will occasionally write back to HEI requesting more information. HEI's expenses for this type of marketing are employee salaries for writing the editorial and the cost of preparing a camera-ready version of the editorial.
4. **News releases** (NEWS). A news release is a one-paragraph description of a new product that typically appears in the back of a magazine. News releases will be published for free by magazines that are already carrying HEI advertisements as a courtesy to the client. Like requests for literature (below), interested readers send a postcard to the magazine, which is then forwarded to HEI. Costs incurred for this type of advertising are employee salaries for processing requests.
5. **Literature** (LIT). Readers of magazines or trade journals may make a request for literature or more information about HEI by circling a request number on a "bingo

card" and sending it back to the magazine or journal. Requests are then sent from the magazine or journal to HEI, which responds to the requests appropriately.

Requests for information by prospective customers are called "leads." By asking customers where they heard about the new product, the advertising group is able to compile information about the number of leads generated by each of these media types; they also know the expenses incurred in each media class. The data cover the last 17 months. These data have been assembled on the accompanying CD in the file named LEADATA.

Variable	Label
MONTH	Actual month of exposure (= 1 to 17).
RESPONSE	Actual number of responses.
SPEND	Dollar cost incurred in that month.
MAGS	Magazines used (1 = used, 0 = not used).
POST	Postcard decks used (1 = used, 0 = not used).
EDIT	Editorials used (1 = used, 0 = not used).
NEWS	News releases used (1 = used, 0 = not used).
LIT	Literature used (1 = used, 0 = not used).

Question

1. What is the most effective type of advertising outlet for HEI? Do you have any recommendations on the appropriate mix of the five different types of advertising?

Source: These data are real even though the name of the company and its location have been changed. Tessa E. Alexander and Edwin C. Peterson have granted permission to use these data, which they originally collected for the study. Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

Inquiring Minds Want to Know—NOW!

Penton Media, a publisher of such business magazines as *Industry Week, Machine Design,* and ***Restaurant Hospitality,*** was experiencing a decline in use of publication reader service cards. This postcard-sized device features a series of numbers, with one number assigned to each ad appearing in the publication. Readers circle the advertiser's number to request product or service information by mail. Cards are used to track reader inquiries stimulated by advertising within the magazine. "By 1998 there was a growing belief in many quarters that business publication advertising was generating fewer leads than in the past," shares Ken Long, director of Penton Research Services. "Knowing whether or not this is true is complicated by the fact that many companies don't track the source of their leads." This belief, however, could ultimately lead to lower advertising revenues if alternate methods of inquiry stimulation went untracked.

Penton started its research by comparing inquiry response options offered within September issues of 12 Penton magazines, including *Industry Week.* Ads were drawn from two years: 1992 (648 ads) and 1997 (690 ads). The average number of response options per ad was 3.3 in 1992, growing to 4.1 in 1997. More than half of 1997 ads offered toll-free telephone numbers and fax numbers. "Two inquiry methods that are

commonplace today, sending e-mail and visiting an advertiser's Internet website, were virtually nonexistent in 1992," noted Long. Not a single 1992 ad invited readers to visit a website and just one ad listed an e-mail address. Website addresses were found in three of five (60.9 percent) 1997 ads, with e-mail addresses provided in 17.7 percent of ads. Today, many websites contain a "contact us" feature that generates an e-mail message of inquiry. In 1997, advertisers were including their postal mailing address only 55.5 percent of the time, compared with 69 percent in 1992 ads.

Penton pretested a reader-targeted mail questionnaire by phone with a small sample drawn from its database of 1.7 million domestic subscribers. A second pretest, by mail, involved 300 subscribers. Penton mailed the finalized study to 4,000 managers, executives, engineers, and purchasing agents selected from the U.S. Penton database. The survey sample was constructed using stratified disproportionate random sampling with subscribers considered as belonging to one of 42 cells (seven industry groups by six job titles). A total of 710 completed questionnaires were received, with 676 of the respondents indicating that they were purchase decision makers for their organization. Penton analyzed only the answers of these 676 buyers. Data were analyzed by weighting responses in each cell by their percentage makeup in the overall population. The overall margin of error for the survey was ± 4 percent at the 95 percent level of confidence. In-depth follow-up telephone interviews were conducted with 40 respondents, to gain a deeper understanding of their behavior and attitudes.

Almost every respondent (97.7 percent) had contacted at least one advertiser during the past year. Newer methods of making inquiries—Web visits, fax-on-demand, or e-mail—were used by half (49.1 percent) of the buyers surveyed. But a look ahead shows the true impact of information technology. Within the next five years, 73.7 percent expect to respond to more ads by sending e-mail to the company. In addition, 72.2 percent anticipate visiting an advertiser's website, and 60 percent expect to increase their use of fax-on-demand. Three out of five purchasing decision makers have access to the Internet, and 74.3 percent of those without Internet service expect to have it within the next five years. Seven of 10 (72.4 percent) respondents plan to use the Internet to research potential suppliers, products, or services during the next five years, compared to 33.1 pecent using it for that purpose during the past year.

Findings revealed that the need for fast response and the need for information on product availability and delivery are influenced by the following:

1. Time pressures created by downsizing of the work force and demands for greater productivity.
2. The fast pace of doing business.
3. Cost considerations.

Behavior varied depending on immediacy of purpose. When buyers have an immediate need for a product or service, telephone contact is the inquiry method of choice. Of the respondents, 79.5 percent reported that they had called a toll-free number in the past year for an immediate need, while 66.1 percent had called a local number, and 64.7 percent had called a long-distance number. When the need for a product or service is not immediate, buyers are more likely to use the mail. Among respondents, 71.4 percent reported they had mailed a reader service card in the past year for a nonimmediate need, and 69.3 percent had mailed a business-reply card to an advertiser.

"A new paradigm is emerging for industrial purchasing," concludes Long. "Buyers are working in real time. They want information more quickly and they want more information."

Questions

1. Build the management-research question hierarchy.
2. What ethical issues are relevant to this study?
3. Describe the sampling plan. Analyze its strengths and weaknesses.
4. Describe the research design. Analyze its strengths and weaknesses.
5. Critique the survey used for the study.
6. Prepare the survey for analysis. Set up the code sheet for this study. How will this study be set up to be tabulated by a statistical analysis program like SPSS?
7. Assume you are compiling your research report. How would you present the statistical information within this case to the *Industry Week* decision maker, the manager who must decide whether or not to continue to publish reader service cards?
8. Assume you are compiling your research report. What are the limitations of this study?
9. Assume you are the decision maker for *Industry Week*. Given the declining value of the reader response card to subscribers, originally designed as a value-enhancing service to *IW* readers and advertisers alike, what further research might be suggested by the findings of this study? Or do you have sufficient information to stop the use of reader response cards in *Industry Week*?

Source: Ken Long, Director of Penton Research Services, provided the data and the instrument in November 1999. Used with permission of Pamela S. Schindler and Donald R. Cooper, © 2001.

Cover Letter and Questionnaire for Mail Survey

Could we ask a favor of you?



We are conducting a nationwide survey of executives to help companies better understand and respond to your requests for information.

Your name has been selected as part of a relatively small sample, so your reply is vital to the accuracy of the study findings. All individual responses will remain completely confidential, with answers combined and presented in statistical form only.

We would be grateful if you could take a few minutes to respond to this survey. A postage-paid envelope is enclosed for your convenience.

We look forward to your reply!

Cordially,

Director of Research

P.S. To ensure a correct entry in the random drawing for the hand-held color TV, please make any necessary changes to your mailing label.

PLEASE TURN PAGE . . .

Questionnaire for mail survey:

1. Are you involved in specifying, recommending, purchasing, or approving the purchase of any of the following for your organization? (Check *all* that apply.)
   - ❒ Construction/renovation work
   - ❒ Equipment/machinery
   - ❒ Maintenance/repair/operating supplies
   - ❒ Production material/components
   - ❒ Services
   - ❒ Other
   - ❒ Not involved in purchasing decisions
2. During the **past year,** which of the following actions have you taken in response to an ad, to obtain information about potential suppliers/products/services for your organization? (Check ***all*** that apply.) Please check the box in the last column if you have not taken the indicated action in the past year.

	Action Taken During the Past Year		
	For an Immediate Product/Service	**For a Nonimmediate Product/Service**	**Did Not Do in the Past Year**
Faxed			
Business reply card to company	❒	❒	❒
Coupon from ad	❒	❒	❒
Letter to company	❒	❒	❒
Publication reader service card	❒	❒	❒
Mailed			
Business reply card to company	❒	❒	❒
Coupon from ad	❒	❒	❒
Letter to company	❒	❒	❒
Publication reader service card	❒	❒	❒
Sent e-mail to company	❒	❒	❒
Telephoned company			
Local number	❒	❒	❒
Nontoll-free (long distance) number	❒	❒	❒
Toll-free (800 or 888) number	❒	❒	❒
Used advertiser's fax-on-demand service	❒	❒	❒
Visited the company's Internet website	❒	❒	❒
Other	❒	❒	❒

3. What are the ***three*** most useful types of information an advertiser can provide when responding to your inquiry? (Please check only *three*.)

- ❒ Ability to customize products/services
- ❒ Availability/delivery
- ❒ Complete company catalog
- ❒ Short-form (condensed) catalog
- ❒ Company experience/expertise
- ❒ Company financial strength/stability
- ❒ Customer/client list
- ❒ Customer service/technical support
- ❒ ISO/professional certification
- ❒ List of sales/service locations
- ❒ Price list
- ❒ Product specifications
- ❒ Quality/reliability
- ❒ Savings in time/money
- ❒ Warranty/guarantee offered
- ❒ Other (please specify): _____

4. a. Please estimate the change over the ***past five years*** in your use of each of the following methods of obtaining information, in response to advertising, about potential suppliers/products/services for your organization. Check the box in the fourth column if you have not taken the indicated action in the past five years.

   b. Over the ***next five years***, do you expect your use of each method of obtaining information to increase, decrease, or stay about the same?

	a. Change over the Past Five Years:				***b. Expected Change over the Next Five Years:***		
Method Used to Obtain Information	**Has Increased**	**Has Stayed the Same**	**Has Decreased**	**Haven't Done in Past 5 Years**	**Will Increase**	**Will Stay the Same**	**Will Decrease**
Faxing							
Business reply card to company	❒	❒	❒	❒	❒	❒	❒
Coupon from ad	❒	❒	❒	❒	❒	❒	❒
Letter to company	❒	❒	❒	❒	❒	❒	❒
Publication reader service card	❒	❒	❒	❒	❒	❒	❒
Mailing							
Business reply card to company	❒	❒	❒	❒	❒	❒	❒
Coupon from ad	❒	❒	❒	❒	❒	❒	❒
Letter to company	❒	❒	❒	❒	❒	❒	❒
Publication reader service card	❒	❒	❒	❒	❒	❒	❒
Sending e-mail to company	❒	❒	❒	❒	❒	❒	❒

(continued)

Method Used to Obtain Information	a. Change over the Past Five Years: Has Increased	Has Stayed the Same	Has Decreased	Haven't Done in Past 5 Years	b. Expected Change over the Next Five Years: Will Increase	Will Stay the Same	Will Decrease
Telephoning company							
Local number	❒	❒	❒	❒	❒	❒	❒
Nontoll-free (long distance) number	❒	❒	❒	❒	❒	❒	❒
Toll-free (800 or 888) number	❒	❒	❒	❒	❒	❒	❒
Using advertiser's fax-on-demand service	❒	❒	❒	❒	❒	❒	❒
Visiting the company's Internet website	❒	❒	❒	❒	❒	❒	❒
Other	❒	❒	❒	❒	❒	❒	❒

5. a. Overall, which one method of obtaining information about potential suppliers/products/services for your organization do you most prefer to use? (Please check only *one*.)

Faxing:

- ❒ Business reply card to company
- ❒ Coupon from ad
- ❒ Letter to company
- ❒ Publication reader service card

Mailing:

- ❒ Business reply card to company
- ❒ Coupon from ad
- ❒ Letter to company
- ❒ Publication reader service card
- ❒ Sending e-mail to company

Telephoning the company:

- ❒ Local number
- ❒ Nontoll-free (long distance) number
- ❒ Toll-free (800 or 888) number
- ❒ Using company's fax-on-demand service
- ❒ Visiting the company's Internet website
- ❒ Other *(please specify:)* _____

b. Why do you prefer to use this method? _____

_____

6. a. Do you currently have access to the Internet? (Check *all* that apply.)

❒ Yes, at work ❒ Yes, at home/away from home ❒ No current Internet access

b. If you don't currently have Internet access, do you expect to have access in the future?

❒ Yes, within the next year ❒ Yes, in 1–5 years ❒ No, not within next 5 years

(continued)

7. a. If you currently have Internet access, in which of the following ways have you used the Internet in your job during the **past year?**

   b. If you currently have or plan to have Internet access, how do you expect to use the Internet in your job in the **next five years?**

	a. Use of the Internet During the *Past Year*	b. Expected Use of the Internet During the *Next Five* Years
Reading industry/professional newsgroup postings (e.g., bulletin boards)	❒	❒
Researching potential suppliers/products/ services for your organization	❒	❒
Obtaining technical information	❒	❒
Communicating by e-mail:		
With potential suppliers for your organization	❒	❒
With other buyers about potential suppliers/ products/services	❒	❒
Purchasing products or services for your organization	❒	❒
Other (*please specify*): _____	❒	❒
NO JOB-RELATED USE OF INTERNET	❒	❒

GENERAL INFORMATION

8. Are you male or female? ❒ Male ❒ Female

9. What is your age? ❒ Under 30 ❒ 30–39 ❒ 40–49 ❒ 50 or older

10. How many years have you been with your current organization? _____ years

11. How many years have you been involved in the purchasing process at your organization? _____ years

Mastering Teacher Leadership



Ohio legislators recently implemented new standards for those wishing to teach within Ohio's public and private schools. Teachers certified to teach in Ohio in 2002 or later will need to complete a master's degree before obtaining their second licensure renewal. New teachers, therefore, will have a five- to seven-year window to complete the master's degree after their initial licensure to teach.

Historically, teachers have looked to graduate level courses to fulfill their professional development requirements. According to the newly passed Ohio Department of Education Teacher Certification Standards, for the first time all professional development activities must be tied to professional development plans customized by local school district goals. All such plans will be approved and monitored by Local Professional Devel-

opment Committees. These LPDCs will look favorably on courses that fit local goals, which are increasingly motivated by student performance variances on standardized tests.

Wittenberg University is primarily a resident campus of 2,000 students affiliated with the Lutheran Church in America. Located in central Ohio, Wittenberg is a comprehensive liberal arts institution with professional programs in education, business management, pre-med, and pre-law. It has been training teachers for more than 150 years and has earned a reputation for producing exceptional teachers for K–12 programs. This high quality, as perceived by local teachers who supervise Wittenberg undergraduate field teaching experiences, is expected to be Wittenberg's greatest asset in pursuing the development of a master's program.

Wittenberg, historically, has not offered a graduate degree in education, but it has offered graduate degrees in its nationally recognized music program and, until the mid-1980s, in its theology program. Wittenberg sees the change in Ohio Teacher Certification Standards as an opportunity for its Center for Professional Development (WittCPD), a program of professional development courses designed to fulfill the continuing education requirements of teachers in the area.

Central Ohio is rich with high quality universities. Within a 30-minute drive of Wittenberg's campus, undergraduate teacher education programs can be found at Wright State University (WSU), the University of Dayton (UD), Urbana College, Cedarville College, Wilberforce University, and Central State University. WSU and UD currently offer Master of Arts degrees in teaching. WSU offers continuing education programs that fulfill professional development programs.

Increased turnover is also expected to be a motivating factor contributing to increased enrollment in university development programs. Ohio's schoolteacher turnover is expected to increase due to the aging of the teacher population, incentive buyout programs designed to encourage aging teachers to retire, and the need to hire experienced teachers in the hard-to-fill math and science areas. With an average 15 years teaching experience, Clark County schools have more than 900 certified staff and hire 50–60 new teachers each year. Springfield City schools have more than 800 certified staff and hired 119 teachers in 1997, 99 in 1998, and 118 in 1999.

The faculty of the education department, in concert with university administrators, conducted a brainstorming session in early fall 1998 to identify university resources that might contribute to a master's program in education. This was followed by a retreat with an Ohio Department of Education consultant, who reiterated the advantages of a liberal arts-based program in the ongoing preparation of K–12 teachers.

To further explore the opportunity for offering a Master of Arts degree in Classroom Leadership, WittCPD conducted three focus groups: two with Springfield City district teachers and one with local school superintendents. Both groups were positive about the likelihood of a program customized to the needs of the various local school districts. Additionally, they provided direction for the desired content and orientation of an effective program. Such a program would need to:

- Deal with the diverse cognitive and social needs of students.
- Emphasize technological literacy for both teachers and students.
- Emphasize both program and classroom assessment by providing a sound research foundation for both curriculum and instruction.
- Address classroom management issues of student social skills, moral education, and discipline.
- Provide a framework for teachers to learn to collaborate with other teachers and with community professionals.

In the spring of 1999, Education faculty associated with the WittCPD drafted a market survey and mailed it to 2,000 practicing teachers in a four-county area. Each of the 1,600 teachers in Clark County, Wittenberg's home county, received a questionnaire, with the remaining 400 surveys delivered to a systematic sample teaching in the outlying counties of Green, Montgomery, and Champaign. By September 1, 1999, 763 teachers had returned their surveys (31.8 percent response), of which 53.8 percent of respondents had completed or were enrolled in degree programs beyond the bachelor's level.

Out of 763 teachers, 21.2 percent said they definitely would enroll, with an additional 57.7 percent who might enroll, citing professional requirements, professional advancement, or keeping their certification as the three primary reasons for enrolling. Those who expressed a lack of interest in a Master of Arts program at Wittenberg claimed as three obstacles the anticipated high cost, their holding a current master's degree, or family responsibilities.

In order for the Wittenberg Board to approve the offering of the new degree program, the program needs to continue the liberal arts tradition and strengthen the undergraduate teacher education program, as high quality undergraduate education is seen as part of Wittenberg's primary mission. Additionally, new academic initiatives such as the one proposed are increasingly asked by the board to reach break-even within their first operating year.

Questions

1. Build the management-research question hierarchy for this opportunity.
2. Evaluate the appropriateness of the exploratory stage of the research design.
3. Evaluate the sampling strategy.
4. Evaluate the survey:
   a. In terms of structure, what is the quality of this instrument? What improvements would you make?
   b. In terms of measurement questions, are the chosen response strategies appropriate?
   c. Does this instrument meet the needs summarized in the investigative questions noted in your management-research question hierarchy (question 1 above)?
5. Prepare a preliminary analysis plan for this study. Which variables do you want frequencies on? Why? Which variables do you want to cross-tabulate? Why?
6. Analyze the data from this study on your CD (Excel 97 file format: Witt Masters CPD.xls). With respect to creating a Master of Arts in Classroom Leadership program, what recommendation is supported by your data analysis?
7. What role could GIS play in this analysis?

Source: Dr. Robert Welker, Director, Wittenberg Center for Professional Development, provided the data and survey instrument to the authors in November 1999. Used with permission of Pamela S. Schindler and Donald R. Cooper, © 2001.

Survey Cover Letter and Graduate Program Survey

February 22, 1999

Dear Colleague:

Wittenberg University is exploring the potential of a Master of Arts program in education. In order for us to understand the promise of such an effort, we are asking that you complete the following survey. Our purpose is twofold. We would like to understand your potential interest in a master's program at Wittenberg and in taking courses for graduate credit here. Second, we would like to use the information you provide to create a graduate program as receptive to the needs of practicing teachers as possible.

Please complete the attached survey form and return it in the postage-paid envelope provided by March 20, 1999. Thank you for completing this survey and thank you for your continued work with our community's young people.

Regards,

Robert Welker, Ph.D.

Director

Wittenberg Center for Professional Development

Graduate Survey Program

1. Counting this year, how many years have you taught?

   ❒ 0–5 years ❒ 6–10 years ❒ 11–15 years ❒ 16–19 years ❒ 20 or more years

2. Professional responsibility and subject field. Check all that apply.

Grade Level	Subject Area	
❒ Preschool to grade 3	❒ Art	❒ Music
❒ Grade 4 to grade 8	❒ Business/Economics	❒ PE/Health
❒ Grade 9 to 12	❒ 0–5 years	❒ Social studies
❒ Special education	❒ 0–5 years	❒ Science
❒ Administration	❒ 0–5 years	❒ Other _____

   ❒ Other: _____

3. Highest level of education obtained. Please select one from the list below.

   ❒ Less than a B.A./B.S. ❒ B.A./B.S.

   ❒ B.A./B.S. plus graduate work ❒ Currently in M.A./M.S. program

   ❒ M.A./M.S. ❒ Ph.D. or currently enrolled in Ph.D. program.

   ❒ M.A./M.S. plus additional graduate work

   If you are currently enrolled in a graduate program, which college or university are you attending?

   _____

4. Which of the following qualities are most important to you in a graduate program? (Please rank the top three qualities with "1" being of most importance, "2" being of next most importance, etc.)

   ____ Reputation ____ Quality of instruction ____ Class size

   ____ Schedule flexibility ____ Closeness to home ____ Individual attention

   ____ Cost ____ Other

(continued)

5. If costs were kept competitive, how likely would you be to apply to a master's degree program in education at Wittenberg?

❒ Definitely would apply ❒ Might apply ❒ Would not apply

6. If costs were kept competitive, how likely would you be to enroll in graduate courses at Wittenberg to enhance skills without pursuing a master's degree?

❒ Definitely would apply ❒ Might apply ❒ Would not apply

7. Please indicate the three most important reasons for your interest in graduate education at Wittenberg, with "1" being your most important reason, "2" your next most important reason, etc.

____ Professional requirements
____ Professional advancement
____ Personal satisfaction
____ Future requirement
____ Career change
____ Increased employability
____ Additional money
____ Keep certification
____ Upgrade certification
____ Improving skills

Other: _____

8. Please check the two most important reasons for your lack of interest in graduate education at Wittenberg.

____ Cost
____ Family responsibilities
____ Time to complete the degree
____ Professional commitments
____ Live too far away
____ Too near retirement
____ Lack of information
____ Already have a master's degree
____ Enrolled in master's program

Other: _____

9. Please indicate from the list below which of the following might be anticipated as an obstacle to your enrolling in a master's level or graduate class at Wittenberg.

____ Child/elder care
____ Financial need
____ Family commitments
____ Travel
____ Employment schedule

Other: _____

10. What professional development areas most interest you? Please rank the top three professional development areas that interest you, with "1" being your area of strongest interest, "2" being your area of next strongest interest, etc.

____ Enhancing subject matter knowledge
____ Using technology in the classroom
____ Child development
____ Teaching reading/writing
____ Specific learning disabilities
____ Teacher leadership development
____ Developing social skills in students
____ Teaching Arts
____ Teaching Social Studies
____ Teaching English/Language Arts
____ Teaching Math
____ Teaching Science
____ Urban social backgrounds
____ Moral and character development

Other: _____

(continued)

11. How far would you have to drive to attend WU?

❒ under 10 minutes ❒ 10–20 minutes ❒ 21–30 minutes

❒ 31–45 minutes ❒ 46–60 minutes ❒ more than 60 minutes

12. When during the year would you be able to take graduate courses? (Check all that apply.)

❒ Fall (Aug.–Dec.) ❒ Spring (Jan.–April) ❒ Summer (May–July)

13. Which day and time scheduling option below most appeals to you?

❒ Fall through spring: Day (8:00 AM–4:00 PM)

❒ Fall through spring: Late afternoon (4:00 PM–6:00 PM)

❒ Fall through spring: Evening (6:00 PM–10:00 PM)

❒ Fall through spring: Saturday

❒ Summer day (8:00 AM–4:00 PM)

❒ Summer evening: (6:00 PM–10:00 PM)

If you would like to receive more information about graduate progamming in education at WU, please add your name and mailing address below.

Name: _____

Address: _____

Thank you for your time and assistance. Please return the survey in the postage-paid envelope by March 20.

Match Wits with Jason on Sampling Theory

"Do you know if the post office accepts checks?" asks Audrey, the business manager at the Chevron station.

"Couldn't say," Jason replies.

"Because I am going to spend a fortune on stamps and I don't want to carry a lot of cash down there." She waved a thick folio of three-up mailing labels. "I've got to survey our customers. Our banker insists. You know that new loan officer? The MBA? The one named Jasmine, who calls herself 'Jazz'?" We asked her for $50,000 so we can open at 5 A.M. and stay open until midnight—we have to put up a fence and some shrubbery, so as not to disturb the apartments in back, and install two new bays—and she told us to survey our customers to find out if many of them are retirees who go to bed early and wake up late and wouldn't use our service. And find out when the others leave for work in the morning and come home at night."

"So you have to do a survey."

"Yes. Three or four questions, maybe—nothing complicated. Like the two I mentioned and 'How long have you been our customer?'"

"How many years have you been our customer," Jason murmured reflexively.

"Oh, yeah, right. More precise, isn't it?" Audrey said. "But the point is, do you know what it costs to write to 1,000 customers?"

He crunches the numbers in his head. Postage to send out the survey. Postage prepaid to have it mailed back. Paper and printing. One envelope outbound and one inbound. Stuffing the outbound and opening and coding the inbound. "Minimum of $1.50 a survey," he says, "if your kids do the stuffing and opening and encoding. Maybe more. You generate labels from your computer, so you don't pay for labels, which saves a mint, maybe 25 cents a name."

"Right. A $1.50 times 1,000. Plus the kids' time, if I can pry them away from Little League, MTV, and personal calls."

"You don't need to survey 1,000 customers, you know."

"Whaaat?"

"Pick 100 at random from your computer list. You'll get a 10 percent margin of error and save $1,350, plus the kids' time."

"That's hard to believe."

"But it's true," he said. "Look, why don't you take some of the money you save, and instead of just sampling 100 from your existing customer base, also do a separate survey of every 20th person from the Chamber of Commerce directory. You'll have one survey of customers and another of potential customers, and you'll still end up saving over $1,000."

She thought for a moment. "The banker will never believe this," she objects.

"The next time I make a deposit, I'll explain it to her."

"You do that," she said, "and we'll wax your car every three months for the next two years."

Jason was excited by the idea of having his car washed and waxed at no charge. He knew he was trading consulting services cheaply for automotive services, but it felt free, so the next day when he went to the bank he approached the new bank officer—the new market development VP, actually—with carefully disguised excitement. This was going to be more fun than working for money.

Gosh, she was a tall woman. Jasmine Rogers. Thirty-five, he guessed, 6 feet 2 inches or even 6 feet 3. Hard to tell when she was sitting. She sat grandly behind a mahogany desk in a cubicle with three glass walls. But the back wall was covered—by sports memorabilia. A basketball shirt said, "Morgan State—African Tour, 1985," and there was another shirt that said, "Harvard B-School Intramurals." There were crossed field hockey sticks, too, and a boomerang and a picture of her holding the boomerang with small folks he supposed were Australian nationals casting admiring glances at this tall American woman.

She came out to greet him and propelled him—almost lifted him—to a seat in her cubicle.

"So, what's up, Jason? Are we taking good care of you? Do you need another dozen computers? What?"

"I want to talk to you about the survey you asked Audrey to make. She and Juan own the Chevron station . . ."

"Oh, sure. Audrey and Johnny. Good people . . . Say, if you are thinking of getting a BMW, I can give you a good rate on a loan."

"Well, I'm not in that bracket, Jazz . . . Look, you told Audrey to take a survey of her customers, and that's what I want to discuss."

"I didn't intend her to have to hire a high-powered business consultant."

"Well, actually, this is more or less a favor, you see . . ."

She chuckled. He thought she had a nice disposition for a banker. "A favor? By any means did she offer to wax your car about a million times for this favor? I had to turn down that particular offer, being her loan officer. Conflict of interest, you know. But if you want to help her, hey, I say that's great."

"Well, this is no big deal, Jazz. More or less a back-of-the-envelope computation, you see. Except I did it in my head, as there was no envelope handy."

"In your head? Impressive. I was on the math team in high school . . ."

"Here's the thing. Audrey was about to do a census of her customers . . ."

"A census? Surely not a survey of *all* her customers. I want just a sample. She must have misunderstood."

"Well, that's the thing . . . I mean, I believe that a sample of maybe 100 customers will do the trick."

"I took marketing research in B-school, Jason, and while I certainly don't want to break Audrey's back, a sample of 100 seems kind of . . . well, thin."

"Maybe I can convince you."

"Maybe." She steepled her fingers thoughtfully and smiled wickedly. "Are you a betting man, Jason?" She placed a tall glass tumbler holding several dozen drinking straws between them. "I am willing to bet you cannot convince me."

1. Well, we've set the stage for you. Now see if you can anticipate how Jason will convince Jazz to accept a small sample rather than the larger sized sample she obviously has in mind. Assume Jason wants to win this battle of wits. What would he argue?

[Instructor will provide additional material.]

"Let me jump ahead here, Jason, because lunch approaches rapidly. I am willing to settle for a 95 percent chance of correctly locating the population proportion of retirees within an interval . . ."

2. Assume Jason interrupts Jazz before she specifies her error interval. What will Jason come back with if he is mentally calculating sample size?

[Instructor will provide additional material.]

Jazz leaned forward and grasped Jason's left hand with her right hand, to prevent him from writing formulas in the air, and held up the index finger of her left hand for attention. "One second, Jason. I am willing to bet you this," she extracted one drinking straw from the glass, "this valuable drinking straw, that I can tell you the formula to use. We take .2 and multiply by .8, and divide by 100 (which is your proposed number of subjects), and take the square root, which is, um . . ."—she rolled her eyes to the ceiling—"which is .04. And we multiply by 2. So the 95 percent confidence interval extends between .20 plus and minus 0.08, from .12 to .28." She laughed merrily and moved the straw closer to her side of the desk. "Come on, Jason, play this game to win. I won't take it out on Audrey."

3. Is Jazz correct? Or has Jason won this point? What will Jason tell Jazz to do to improve her estimate?

[Instructor will provide additional material.]

4. Assume Jason lets Jazz keep the straw even though she could have done her calculation differently. What might be considered Jazz's error(s)?

[Instructor will provide additional material.]

"OK, I'll give that to you, Jason, a sample of 100 will give me all the precision I want for that question. But what about the next question, 'What time do you leave your home in the morning to go to work?'"

5. Jason's being put through his paces here. What should his answer be this time? Look at the nature of the second question to determine the correct formula to use.

[Instructor will provide additional material.]

She reached into the tumbler and withdrew another straw. "Wait just a second, Jason. I will bet you this straw that you don't know the standard error of the sample until after you have taken the sample."

6. This is Jason's last chance to impress Jazz . . . and win. What must he know, and where might he have gotten this information, for a quick answer to the standard error of the sample?

[Instructor will provide additional materials.]

7. So, what's Jason's final rebuttal?

"OK, Jason, you win. You have convinced me. If she can retrieve 100 surveys, I'll be satisfied. But I'll bet she will have to send out 200 surveys to get 100 replies."

Source: The authors adapted this case from their Chapter 9 Close-Up, *Business Research Methods*, 6th edition. Used with permission of Pamela S. Schindler and Donald R. Cooper, © 2001.

McDonald's Tests Catfish Sandwich

Nashville, Tennessee—McDonald's Corp. is trying to hook customers in southern test markets, including one in Kentucky, on a new catfish sandwich.

The chain is serving its newest sandwich in Bowling Green, Kentucky; Memphis, Chattanooga, and Jackson, Tennessee; Huntsville, Alabama; Jonesboro, Arkansas; and Columbus, Tupelo, Greenville, and Greenwood, Mississippi, said Jane Basten, a marketing specialist for McDonald's in Nashville.

The sandwich consists of a 2.3-ounce catfish patty, lettuce, and tangy sauce served on a homestyle bun.

The company will evaluate the sandwich based on sales and supply availability after a six-week ad campaign ends in mid-April.

"The advertising will be similar to what we're doing right now with the grilled steak sandwich," Basten said. "We will promote it to the fullest and see what happens."

The Catfish Institute, an industry promotion association based in Belzoni, Mississippi, is supplying the catfish.

Catfish Institute director Bill Allen said catfish farmers, processors, and marketers are "very excited about this prospect for our industry. This is super good news.

"But we don't want to get our hopes up too much and start thinking this is going to be our salvation, because we already have a viable industry."

Allen said that catfish firms that remember earlier tie-ups with major restaurant chains such as Church's Fried Chicken are cautiously optimistic about the McDonald's deal.

Questions

1. The management team for new product development was interested in assessing the relevancy of the chosen test markets to the three states designated for rollout if the test market was satisfactory (Tennessee, Alabama, and Georgia).
   - **a.** What are your conclusions about the representativeness of the test cities to the designated rollout states?
   - **b.** What secondary data should you present to support your conclusions? Where will you obtain this data?

Source: "McDonald's Tests Catfish Sandwich" (March 18, 1992, p. 10), used with permission of *Marketing News*. Case notes used with permission of William R. Dillon, Thomas J. Madden, and Neil H. Firtle, *Marketing Research in a Marketing Environment*, 3/e, 1994, Irwin. Used with permission of The McGraw-Hill Companies.

Medical Laboratories



Your hospital does medical tests on-site whenever possible but sends more complicated or technologically advanced tests to a commercial testing facility. About 70 percent of your lab tests are done at an outside medical laboratory.

You have been quite pleased with your outside medical lab, but it has just announced a 20 percent increase in its fees and claims that its lab is merely passing on

increasingly higher costs of performing medical tests. It says that commercial medical laboratories across the country have had low profit margins for years because of the high costs of doing technologically sophisticated medical tests. A 20 percent increase would have serious consequences for your own profit margin and might require cutting down or eliminating other services within the hospital.

To study this problem, you have collected a random sample of 16 medical laboratories across the country. The laboratories chosen for study are indicated below. You have five years of data covering the years 1986–1990 for each of these 16 labs. The data file on the accompanying CD is named MEDLABS.

Questions

Use these data to undertake a study of the financial health of these laboratories. As your measure of financial health, you have chosen to use OPASSTS. net operating assets in millions of dollars.

1. Use an appropriate statistical method to characterize OPASSTS.
2. What factors influence OPASSTS? How?
3. Does your study shed any light on the claims made by your own medical laboratory?
4. Prepare a summary of these matters for presentation at a meeting next week.

Variable	Label	
FIRM	1 = Enzo Biochem Inc.	10 = Damon Corp.
	2 = Nichols Institute	11 = Damon Group Inc.
	3 = Princeton Diagnostic Labs	12 = Diagnostic Sciences Inc.
	4 = United Medical Corp.	13 = FCS Labs Inc.
	5 = Vivigen Inc.	14 = Keystone Medical Corp.
	6 = American Cytogenetics	15 = National Imaging Inc.
	7 = Bio Reference Labs Inc.	16 = Unilab Corp.
	8 = Compuchem Corp.	
	9 = Consolidated Imaging	
YEAR	Year, 19XX	
PPE	Property, plant, and equipment—Total (net), in millions of $	
ASSETS	Current assets—Total, in millions of $	
LIAB	Current liabilities—Total, in millions of $	
OPASSTS	Net operating assets—Total, in millions of $	

Source: These data come annually from Standard & Poor's COMPUSTAT® Databases, Standard & Poor's Compustat, a division of McGraw-Hill, Inc., New York, NY. Copyright © by McGraw-Hill, Inc. Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

NCR: Teeing Up a New Strategic Direction



NCR Country Club (NCRCC) started in 1954 as an employee benefit of the National Cash Register Co. but is now an open-membership club. This country club located in Kettering, Ohio (near Dayton), hosts two 18-hole golf courses. The NCR South course, a par 71 championship course of 6,824 yards of heavily wooded rolling countryside, the site of the 1996 PGA Championship, the 1986 U.S. Open, and the 1998 U.S. Mid-Amateur, is consistently ranked by *Golf Digest* as one of the top 100 courses in the United States. The prairie-links style of the North course, a 6,358-yard par 70 course, is considered challenging. In southwestern Ohio, the active golf season usually lasts from May through October. Within a 30-minute radius of NCRCC, the avid golfer will find eight other private golf and country clubs as well as 29 public golf clubs and courses.

In 1997, after the purchase of NCR Corporation by AT&T, AT&T provided a $4.0 million interest-free loan to raze the original clapboard-sided clubhouse and replace it with an all-brick colonial-style facility. Boasting both formal and informal, inside and outside eating facilities as well as banquet and party rooms, the members voted that the new clubhouse would be totally smoke-free. The rich cherrywood paneling and the hunter green and burgundy décor mellow the high-ceiling, interior spaces. Golf memberships are $20,000 with social (nongolf) memberships at $1,000 each. NCR employees did not and do not pay membership fees to join. Additionally, each member must spend $150 per quarter in dining receipts and pay $225 (golf) or $160 (social) in annual dues.

Needing to attract new members to support the renovated facility after AT&T divested itself of NCR and given the growing age of its members, NCRCC implemented an aggressive membership campaign in 1998. The goal was to bring golf memberships to 680 and attract as many social memberships as possible. After only moderate success, NCRCC commissioned McMahon Group to assist with strategic planning.

McMahon Group specializes in providing research and strategic consulting to golf clubs and full-service golfing facilities. "Golf club membership within the United States is perceived as a discretionary luxury of life. NCR faces a similar situation found elsewhere in clubs around the country—an older satisfied membership which sees no reason to change what they perceive to be a good thing," shared Frank Vain, president of McMahon Group. "With NCR, we faced another wrinkle. Because NCR was once corporately owned, NCR retirees and current employees saw membership as an entitlement, a right."

After McMahon's First Impressions visit (a free on-site assessment where a club specialist tours facilities, collects information on membership and operations, and discusses industry trends with strategic planning committees), NCRCC's board hired McMahon to provide direction and assistance to NCRCC's strategic planning committee. "Historically, NCRCC has a 7 percent penetration rate among NCR employees. NCR's employee pool was trending smaller, providing continuing downward pressure on NCRCC membership," explained Vain. "With membership segments of NCR retirees (1/3 of members) and current NCR employees (another 1/3 of members) getting less numerous each year, only the segment comprised of non-NCR affiliates provides an opportunity for growth. NCRCC needs to become a stand-alone club to survive."

McMahon Group conducted six focus groups at NCRCC on December 3–4, 1998, involving 43 members, seven nonmembers, and 12 employees. Especially among younger members (under 46) and nonmembers, a golf-only club was less attractive than

the full service array that some other area country clubs offered. A consistent theme was that members did not feel they received the overall level of service at NCRCC that they expected from a fine private country club, whether it be in the dining operation or on the golf course. Staff members were frustrated that meeting the board's profit directive was often counterproductive to a high level of service. The NCRCC board directed McMahon Group to conduct a membership study to explore the feasibility of adding additional facilities, including swimming and fitness facilities to attract younger adults and families with children.

McMahon Group distributed mail surveys to 1,650 members and their spouses in January 1999 (see Exhibit C-NCR 1–2). A return rate of 57 percent and 48 percent, respectively, netted 886 usable surveys. Data were interpreted at ±3% (or ±0.1) at the 95 percent confidence level. Due to McMahon's extensive consulting and research experience with golf facilities nationwide, it was able to compare NCRCC's membership survey results with those of members of 80 other country clubs.

Overall, 72 percent of NCRCC members were either satisfied or very satisfied. This is slightly less than the 79 percent satisfaction level for other clubs. Only 12 percent are very satisfied, with other clubs averaging 21 percent. The group with the highest dissatisfaction rate (19 percent dissatisfied or very dissatisfied) was the key 55–64 age group, with the under 46 group generating 11 percent dissatisfaction. While members currently saw the club as an "Adult Golf and Dining Club" (63 percent), many believed its future would need to incorporate facilities for children, if the club were to remain competitive for new members. This was especially true for those members under age 46.

Most current members joined for golf (80 percent either important or very important) or dining (77 percent either important or very important). Most members were satisfied with golf (81 percent either satisfied [29 percent] or very satisfied [69 percent]). However, level of satisfaction was lower with the over 65 group when it came to course layout (58 percent very satisfied) and condition (77 percent very satisfied). Fewer members were satisfied with dining (49 percent either satisfied or very satisfied). However, even given some dissatisfaction, 61 percent felt their membership was a good value.

The 37th Hole, the casual dining facility, generated concerns about speed of service (27 percent either dissatisfied or very dissatisfied), professionalism of wait staff (19 percent either dissatisfied or very dissatisfied), and menu variety (36 percent either dissatisfied or very dissatisfied). The same concerns surfaced in the formal dining area, with menu variety and meal-to-meal consistency generating the highest dissatisfaction scores. It is very important for NCRCC to provide casual adult dining (95 percent either very important or important), but less so for casual family dining (78 percent), outdoor dining (69 percent), formal dining (44 percent), men's grill (37 percent), and women's grill (22 percent). Dining prices are seen as the same (65 percent lunch, 48 percent dinner) or higher (32 percent lunch, 47 percent dinner) than other clubs and restaurants frequented by members. Members overwhelmingly continue to endorse the no-smoking rule (97 percent formal dining, 94 percent 37th Hole, 83 percent bar/lounge).

"Members think of NCRCC as first a golf club, but the golf wasn't meeting expectations. Second, members see NCRCC as a dining club, but the members were dissatisfied with the casual dining product and service," shared Vain.

Survey results offered good and bad news. Additional facilities would not be attractions to most current members, but many members are interested in improving the current facilities. Fully 59 percent, however, were unwilling to pay higher dues (including 43 percent of under age 46) to obtain the changes they found attractive.

	% All Members	% Members under 46
Facility Additions		
Swimming pool	30	60
Tennis courts	22	36
Health and fitness center	30	49
Spa	30	58
Activities		
For adults	26	40
For families	23	53
For children	18	47
Current Facility Alterations		
Expanding bar/lounge	41% *Important or very important*	
Improving the driving range	36% *Important or very important*	
Improving short game practice area	40% *Important or very important*	

"New facilities were an attraction for the non-NCR affiliated segment," summarized Vain in discussing what McMahon Group shared with the strategic planning committee following the completion of the study. "New facilities, especially swimming, fitness, and outdoor dining, provide the best opportunity to broaden the attraction of the club."

Who Answered the Survey?

- 74% golf (single or family) and 24% social, with 2% corporate memberships.
- 65% are (23%) or had been (42%) employed at NCR.
- 55% male, 45% female.
- In each of four age groups:
  - Under 46 (19%)
  - 46–55 (23%)
  - 56–65 (26%)
  - 66 or older (33%)
- 74% lived within seven miles of NCRCC.
- 42% had been members for 20 or more years.
- 78% did not have children (under age 21) living at home.
- 41% belonged to a swimming/tennis club (15%) or fitness facility (26%).
- 81% reside in the Kettering-Dayton area year round.

Questions

1. Build the management-research question hierarchy, through the investigative questions stage. Then compare your list with the measurement questions asked.
2. Given the research question, how appropriate were the measurement questions?
3. Describe the sampling strategy. How appropriate were the various sampling design decisions?
4. What, if any, problems did you find with the questionnaire as a whole? Consider structure, directions, question order, question phrasing, appropriateness of response strategy chosen, etc.
5. If you were McMahon Group, how would you present the findings of your study to the NCRCC board? Explain the rationale for your chosen method.
6. Given the data presented in the case:
   a. What would you recommend to the board of NCRCC with respect to adding facilities like tennis courts, a swimming pool, a spa, a fitness center, and a year-round driving range?
   b. What would you recommend to the board of NCRCC with respect to adding or changing programming activities like social activities for adults, families with children, and children?
   c. What would you recommend with respect to changing current operations?

Source: Frank Vain, president, McMahon Group, provided the instrument and data with the permission of Larry Appleby, general manager, NCR Country Club in November 1999. Used with permission of Pamela S. Schindler and Donald R. Cooper, © 2000.

EXHIBIT C-NCR 1–1 Importance of Future Facility Additions to New Strategic Direction

	Total %	Age: Under 46%	Age: 46–55 %	Age: 56–65 %	Age: Over 65%	Gender: Male %	Gender: Female %	Member: MBR %	Member: Spouse %	Children?: Yes %	Children?: No %	Member Tenure: 1990–prior %	Member Tenure: 1991–1994 %	Member Tenure: 1995–now %	Membership Status: NCR emp %	Membership Status: NCR Ret or RIFd	Membership Status: Assoc. MBR %	Membership Class: Family %	Membership Class: Single %	Membership Class: Other %	Mean
Swimming Pool																					
Very important	**14**	37	16	7	5	13	16	13	16	35	8	6	20	27	23	6	17	15	9	18	
Important	**16**	23	16	17	11	14	18	15	18	24	13	11	18	26	15	12	22	15	10	24	
Neutral	**13**	9	13	12	15	13	1	12	13	10	13	13	7	14	9	14	14	11	12	15	
Unimportant	**11**	7	11	11	13	12	11	11	10	8	12	11	15	8	10	13	8	10	12	12	
Very unimportant	**46**	25	43	53	56	48	77	49	43	23	53	58	39	24	42	55	38	49	57	31	
TOTAL Count	**797**	149	183	209	245	421	326	475	322	175	594	468	94	213	181	309	259	375	207	204	**2.40**
Tennis Courts																					
Very important	**8**	20	9	4	3	7	9	8	8	20	4	4	7	17	12	4	10	8	5	11	
Important	**14**	16	18	12	12	14	14	13	15	17	13	1	17	21	14	12	17	12	6	24	
Neutral	**18**	22	14	17	19	17	18	18	19	22	16	14	23	23	18	15	20	14	17	26	
Unimportant	**13**	14	13	14	12	12	15	12	14	12	13	13	12	12	13	12	14	11	15	11	
Very unimportant	**47**	28	46	53	55	49	45	49	44	29	53	58	41	26	44	54	41	50	61	28	
TOTAL Count	**777**	146	185	206	230	412	320	459	318	171	581	455	92	207	179	295	258	366	201	198	**2.23**
Health/Fitness																					
Very important	**12**	21	15	9	6	10	13	11	13	22	9	7	14	12	13	6	19	11	12	14	
Important	**19**	28	21	20	10	18	21	19	20	23	18	14	28	26	24	15	21	20	17	21	
Neutral	**20**	18	23	19	19	20	21	20	21	21	19	20	18	21	16	18	24	17	15	30	
Unimportant	**14**	11	13	11	21	16	13	16	13	14	15	17	13	11	14	20	9	17	11	15	
Very unimportant	**34**	22	28	41	43	37	32	35	34	20	39	43	26	20	33	42	28	36	45	21	
TOTAL Count	**769**	148	179	198	229	410	312	463	306	173	569	454	92	203	176	297	253	368	196	193	**2.59**
Enlarge Bar/Lounge																					
Very important	**14**	23	17	14	6	16	10	16	11	15	14	13	19	14	22	7	18	15	17	8	
Important	**27**	30	32	27	22	28	24	28	26	30	26	25	34	28	34	27	22	30	27	22	
Neutral	**27**	23	23	27	32	25	30	25	31	24	28	25	25	34	20	30	30	23	20	43	
Unimportant	**19**	19	20	18	21	19	22	18	20	22	19	21	15	17	17	21	2	20	22	16	
Very unimportant	**13**	4	8	14	19	11	15	12	13	9	14	16	7	6	7	16	10	13	14	10	
TOTAL Count	**847**	158	189	219	264	437	344	510	337	182	629	507	97	219	187	334	274	400	221	214	**3.11**
Improve Driving Range																					
Very important	**14**	20	18	15	5	18	9	15	11	21	12	11	24	17	17	8	19	15	19	5	
Important	**22**	33	24	23	13	23	20	24	19	25	21	19	22	28	27	16	25	29	19	10	
Neutral	**40**	30	34	42	51	36	46	38	45	32	42	42	40	35	34	49	36	34	38	58	
Unimportant	**14**	13	15	12	16	13	16	13	16	12	15	15	10	13	17	14	11	14	13	13	
Very unimportant	**10**	4	9	8	15	11	9	11	9	9	11	12	4	6	5	13	9	8	11	13	
TOTAL Count	**815**	155	191	212	240	432	314	501	314	178	6	490	92	209	186	316	264	395	220	183	**3.15**

	Very Important	Important	N	Unimportant	Very Unimportant	Mean	
Short game practice area	13/17	27/31	**38/35**	14/12	8/4	3.21	Percent of
Year-round driving range	11/22	28/35	29/24	15/12	17/8	3.00	sample/percent of
Add spa	10/25	20/33	22/17	15/11	33/13	2.60	under 46

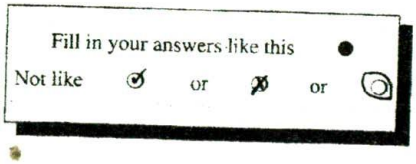
EXHIBIT C-NCR 1–2 NCR Country Club Membership Survey*

INSTRUCTIONS:

Please complete the questionnaire, answering all questions that pertain to your interests at the Club. If you do not participate in a particular Club activity and do not feel qualified to respond to the questions regarding that activity, please leave those questions blank or indicate "No Opinion" and move on to the next question. *Note:* Space is provided at the end of the questionnaire for your written comments and suggestions.

Completed questionnaires should be mailed in the enclosed postage-paid envelope by the date printed on the cover letter directly to McMahon Group at 884 Woods Mill Road, Suite 201, St. Louis, MO 63011.

IMPORTANT: Completely fill in the ovals that correspond to your answers for each question with either a pen or a pencil. The surveys will be electronically scanned. Please do not make extra marks on the questionnaire except in the space provided for written responses at the end of the survey.



1. Please indicate your "overall" satisfaction with NCR Country Club:

(5) Very Satisfied	(4) Satisfied	(3) Neutral	(2) Dissatisfied	(1) Very Dissatisfied
○	○	○	○	○

2. Which of the following best represents what you feel (1) is currently and (2) should be the primary purpose of NCR Country Club? (Please mark only one per column.)

	(1) *Currently*	(2) *Should be*
A *family* oriented, full service country club with activities for children.	○	○
An *adult* oriented, full service country club with *limited* activities for children.	○	○
A golf *and* dining club primarily for adults.	○	○
A golf club primarily for adults.	○	○

3. Using a scale from "5" (Very Important) to "1" (Very Unimportant), how important were each of the following to you in your decision to join NCR Country Club?

	(5) Very Important	(4) Important	(3) Neutral	(2) Unimportant	(1) Very Unimportant
To meet new friends	○	○	○	○	○
Club location					
—in relation to home	○	○	○	○	○
—in relation to work	○	○	○	○	○
Club social functions	○	○	○	○	○

(continued)

*This survey has been reformatted from its original design to fit the specifications of this text. Neither the questions nor the essence of the design has been modified.

	(5) Very Important	(4) Important	(3) Neutral	(2) Unimportant	(1) Very Unimportant
Friends were/are members	○	○	○	○	○
Parents were/are members	○	○	○	○	○
Exclusivity of club's members	○	○	○	○	○
Affiliation with NCR Corporation	○	○	○	○	○
Competitive initiation fee	○	○	○	○	○
Private parties/banquets	○	○	○	○	○
Reputation of club	○	○	○	○	○
Dining	○	○	○	○	○
Golf	○	○	○	○	○
Availability of 36 holes of golf	○	○	○	○	○
"Top 100" ranking of golf course	○	○	○	○	○

4. Please indicate your satisfaction with these characteristics of your Club's Board of Trustees, Committees, and Management:

	(5) Very Satisfied	(4) Satisfied	(3) Neutral	(2) Dissatisfied	(1) Very Dissatisfied
BOARD					
Communication with the membership	○	○	○	○	○
Degree to which board is representative of membership	○	○	○	○	○
COMMITTEES					
Effectiveness of Club committees	○	○	○	○	○
MANAGEMENT/STAFF					
Effectiveness of Club management	○	○	○	○	○
Responsiveness to member questions and suggestions	○	○	○	○	○
Overall level of service provided by Club's management & staff	○	○	○	○	○

5. Please indicate how important each of the following Club activities/services is to you and also how satisfied you are with each:

Rating scale: 5 = Very satisfied, 4 = Satistifed, 3 = Neutral, 2 = Dissatisfied, 1= Very dissatisfied, N.O. = No opinion

Rating scale: 5 = Very important, 4 = Important, 3 = Neutral, 2 = Unimportant, 1 = Very unimportant, N.O. = No opinion

	SATISFACTION						IMPORTANCE					
	5	4	3	2	1	N.O.	5	4	3	2	1	N.O.
Golf	○	○	○	○	○	○	○	○	○	○	○	○
Dining	○	○	○	○	○	○	○	○	○	○	○	○
Club social functions	○	○	○	○	○	○	○	○	○	○	○	○
Private parties	○	○	○	○	○	○	○	○	○	○	○	○
Children's activities	○	○	○	○	○	○	○	○	○	○	○	○
Family activities	○	○	○	○	○	○	○	○	○	○	○	○

6. Please respond to the following statement: "I receive good value for the cost of my membership at NCR Country Club."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No opinion
○	○	○	○	○	○

7. Please respond to the following statement: "There are a sufficient number of social activities at the club that appeal to my age and interest group."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No opinion
○	○	○	○	○	○

8. Do you have access to the Internet?

○ Yes ○ No

Are you aware the club has an Interent website?

○ Yes ○ No

Would you like e-mail notifications from the Club on a regular basis?

○ Yes ○ No

9. Please indicate your satisfaction with the following aspects of the Club's newsletter, *The Mulligan*, and also Club communication in general.

Newsletter Content	(5) Very Satisfied	(4) Satisfied	(3) Neutral	(2) Dissatisfied	(1) Very Dissatisfied
Notification of upcoming events	○	○	○	○	○
Membership activities and stories	○	○	○	○	○
Club business (reports from board committees)	○	○	○	○	○
Newsletter appearance/format	○	○	○	○	○
Newsletter timeliness	○	○	○	○	○
Club communication in general	○	○	○	○	○

Section II. Golf

IF YOU ARE NOT FAMILIAR WITH THE GOLF FACILITIES AND OPERATIONS, PLEASE SKIP TO THE NEXT SECTION OF THE QUESTIONNAIRE.

10. Please indicate your satisfaction with these aspects of the SOUTH and NORTH golf courses:

Rating Scale: 5 = Very satisfied, 4 = Satisfied, 3 = Neutral, 2 = Dissatisfied, 1 = Very dissatisfied, N.O. = No opinion

	SOUTH COURSE						NORTH COURSE					
	5	4	3	2	1	N.O.	5	4	3	2	1	N.O.
Course layout	O	O	O	O	O	O	O	O	O	O	O	O
Overall course condition	O	O	O	O	O	O	O	O	O	O	O	O
Course landscaping (flowers and plantings)	O	O	O	O	O	O	O	O	O	O	O	O
Tee box condition	O	O	O	O	O	O	O	O	O	O	O	O
Condition of fairways	O	O	O	O	O	O	O	O	O	O	O	O
Condition of greens	O	O	O	O	O	O	O	O	O	O	O	O
Condition of bunkers	O	O	O	O	O	O	O	O	O	O	O	O

	SOUTH COURSE						NORTH COURSE					
	5	4	3	2	1	N.O.	5	4	3	2	1	N.O.
Irrigation	O	O	O	O	O	O	O	O	O	O	O	O
Drainage	O	O	O	O	O	O	O	O	O	O	O	O
Condition of cart paths	O	O	O	O	O	O	O	O	O	O	O	O
Course restrooms	O	O	O	O	O	O	O	O	O	O	O	O
Availability	O	O	O	O	O	O	O	O	O	O	O	O
Condition	O	O	O	O	O	O	O	O	O	O	O	O
Availability of drinking water	O	O	O	O	O	O	O	O	O	O	O	O
Beverage cart availability	O	O	O	O	O	O	O	O	O	O	O	O

11. Please indicate your satisfaction with these aspects of the golf operations at the Club:

(answer survey for question 11 on the following page)

	(5) Very Satisfied	(4) Satisfied	(3) Neutral	(2) Dissatisfied	(1) Very Dissatisfied	No Opinion
Golf Pro Shop						
Interior appearance	○	○	○	○	○	○
Pro Shop cleanliness	○	○	○	○	○	○
Merchandise selection	○	○	○	○	○	○
Pro Shop service	○	○	○	○	○	○
Pro Shop prices	○	○	○	○	○	○
Pro lessons	○	○	○	○	○	○
Bag drop service	○	○	○	○	○	○
Bag storage and club cleaning service	○	○	○	○	○	○
Cart service	○	○	○	○	○	○
Cart cleanliness	○	○	○	○	○	○
Practice range						
Condition	○	○	○	○	○	○
Size	○	○	○	○	○	○
Range ball condition	○	○	○	○	○	○
Speed of play	○	○	○	○	○	○
Tournaments						
Quality	○	○	○	○	○	○
Value for price	○	○	○	○	○	○
Format of tournaments	○	○	○	○	○	○
Adult golf programs (i.e., leagues)	○	○	○	○	○	○
Junior golf programs	○	○	○	○	○	○
Tee time reservation system	○	○	○	○	○	○
Halfway House						
Hours of operation	○	○	○	○	○	○
Service	○	○	○	○	○	○
Menu variety	○	○	○	○	○	○

12. How do you feel about the overall use of the golf course as it now exists at the club?

	(5) Excessive	(4) Somewhat Excessive	(3) Fine as Is	(2) Not Quite Dissatisfied	(1) Not Enough
Amount of time available for casual, open member play	○	○	○	○	○
Amount of time permitted for guest use	○	○	○	○	○
Amount of time available for junior play	○	○	○	○	○

(continued)

	(5) Excessive	(4) Somewhat Excessive	(3) Fine as Is	(2) Not Quite Dissatisfied	(1) Not Enough
Number of member-scheduled events/tournaments	○	○	○	○	○
Number of nonmember outings on Mondays	○	○	○	○	○
Number of nonmember outings on days other than Mondays	○	○	○	○	○

13. Please respond to the following statement: "If the Club had a caddy program I would support the program and use caddies on a regular basis when I play golf."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No opinion
○	○	○	○	○	○

14. Please indicate your satisfaction regarding these aspects of the dining in the 37th HOLE, the MEMBERS' DINING ROOM, and for PRIVATE PARTIES:

Rating scale: 5 = Very satisfied, 4 = Satisfied, 3 = Neutral, 2 = Dissatisfied, 1 = Very dissatisfied, N.O. = No opinion

	37th HOLE						MEMBERS' DINING ROOM						PRIVATE PARTIES					
	5	4	3	2	1	N.O.	5	4	3	2	1	N.O.	5	4	3	2	1	N.O.
Service:																		
Staff appearance	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Speed of service	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Friendliness of wait staff	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Professionalism/ training of wait staff	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Food:																		
Quality—Food well prepared	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Food presentation (visually pleasing)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Meal-to-meal consistency	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Menu variety	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

(continued)

	37th HOLE						MEMBERS' DINING ROOM						PRIVATE PARTIES					
	5	4	3	2	1	N.O.	5	4	3	2	1	N.O.	5	4	3	2	1	N.O.
Other:																		
Ambiance/décor of rooms	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Wine list/selections	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Value for the price	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Party planning assistance	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Party follow-up by staff	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

15. How important is it for the Club to provide each of the following dining styles?

	(5) Very Important	(4) Important	(3) Neutral	(2) Unimportant	(1) Very Unimportant
Casual adult dining	○	○	○	○	○
Casual family dining	○	○	○	○	○
Formal dining (coat & tie required)	○	○	○	○	○
Outdoor dining	○	○	○	○	○
Men's grill	○	○	○	○	○
Women's grill	○	○	○	○	○

16. How do the Club's prices compare to the prices charged for similar meals at other clubs and restaurants you visit regularly? Please compare similar dining experiences (i.e., dining in the 37th Hole should be compared to dining in a casual, grill-type restaurant and dining in the Members' Dining Room should be compared to a more upscale-type restaurant).

The Club's prices are . . .	(5) Much Lower	(4) Lower	(3) About the same	(2) Somewhat Higher	(1) Much Higher
Lunch	○	○	○	○	○
Dinner	○	○	○	○	○
Private parties	○	○	○	○	○
Social events	○	○	○	○	○
Wine	○	○	○	○	○
Cocktails	○	○	○	○	○

17. Please respond to the following statement: "The clubhouse should remain a totally nonsmoking facility."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No opinion
○	○	○	○	○	○

Section IV: The Future

18. Listed below are examples of new facilities or additional services the Club may consider adding in the future. Using a scale from "5" (Very important) to "1" (Very unimportant), please indicate how important you feel each item is to the future of the Club.

	(5) Very Important	(4) Important	(3) Neutral	(2) Unimportant	(1) Very Unimportant
Add a swimming pool	○	○	○	○	○
Add tennis courts	○	○	○	○	○
Add a health/fitness facility	○	○	○	○	○
Add paddle tennis courts	○	○	○	○	○
Add a bowling alley	○	○	○	○	○
Add spa facilities (sauna, steam room, Jacuzzi, etc.)	○	○	○	○	○
Provide more social activities	○	○	○	○	○
Provide more family activities	○	○	○	○	○
Provide more children's activities	○	○	○	○	○
Add a year-round driving range	○	○	○	○	○

19. Listed below are examples of improvements to the existing Club facilities that may be considered in the future. Using a scale from "5" (Very important) to "1" (Very unimportant), please indicate how important you feel each item is to the future of the Club.

	(5) Very Important	(4) Important	(3) Neutral	(2) Unimportant	(1) Very Unimportant
Enlarge the bar/lounge	○	○	○	○	○
Enlarge the banquet room to better accommodate large functions such as weddings	○	○	○	○	○
Provide better pedestrian access	○	○	○	○	○
Improve the golf driving range	○	○	○	○	○
Improve the golf short game practice area	○	○	○	○	○
Modify the North Course where possible to make it more challenging	○	○	○	○	○
Modify the South Course where possible to make it more challenging	○	○	○	○	○

20. *a.* Please respond to the following statement: "I would be willing to pay somewhat higher annual dues in order to make the Club more private and provide a higher level of service."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly disagree
○	○	○	○	○

b. How much of an annual dues increase would you be willing to pay to make the Club more private and provide a higher level of service? (Please mark only one.)

○ Nothing ○ 20%
○ 5% ○ 30%
○ 10% ○ 40%
○ 15% ○ 50% or more

21. At present, the Club allows nonmember outings on the golf course on Mondays as well as other days of the week. These outings generate substantial revenue for the Club, which helps to keep member dues lower than they would be without this revenue. However, these outings also reduce member access to the courses, add wear and tear to the courses, and limit the amount of time available for course maintenance.

Please respond to the following statements.

a. "The Club should eliminate outings on days of the week other than Mondays, and I would be willing to pay an additional $100 in annual dues for improved course access and to make up for this lost revenue."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No Opinion
○	○	○	○	○	○

b. The Club should eliminate half the outings on Mondays and all outings on days of the week other than Mondays and I would be willing to pay an additional $300 in annual dues for improved course access and to make up for this lost revenue."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No Opinion
○	○	○	○	○	○

c. The Club should eliminate all outings, both on Mondays and other days of the week, and I would be willing to pay an additional $500 in annual dues for improved course access and to make up for this lost revenue."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No Opinion
○	○	○	○	○	○

22. Please respond to the following statement: "One of the golf courses should always be open for member play on Mondays."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No Opinion
○	○	○	○	○	○

23. Some clubs include additional fees such as locker rental, bag storage, shoe-shine service, and driving range in the annual or monthly dues. At NCR Country Club, additional charges such as locker rental and shoe-shine service are optional services and fees and are billed as separate items.

Please respond to the following statement: "Over the next few years NCR Country Club should move in the direction of bundling all fees and charges (such as locker rental and shoe-shine service) into one dues amount to be paid annually."

(5) Strongly Agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly Disagree	No Opinion
○	○	○	○	○	○

Section V: About You

24. Your membership classification is (spouses of members—please mark the membership classification of your husband or wife):

❍ Family, Golf ❍ Corporate ❍ Social
❍ Single, Golf ❍ Nonresident

25. Which of the following best describes your membership status?

❍ Current NCR employee ❍ Retired or RIF'd NCR employee ❍ Associate member

26. What is your gender?

❍ Male ❍ Female

27. What is your age category?

❍ Under 36 ❍ 46–55 ❍ 66–75
❍ 36–45 ❍ 56–65 ❍ Over 75

28. How many miles is your home from the Club?

❍ 0 to 3 miles ❍ 8 to 15 miles
❍ 4 to 7 miles ❍ More than 15 miles

29. How many miles is your business from the Club?

❍ 0 to 3 miles ❍ 8 to 15 miles
❍ 4 to 7 miles ❍ More than 15 miles

30. When did you first become a member of NCR Country Club?

❍ 1970 or before ❍ 1981–1985 ❍ 1991–1994
❍ 1971–1980 ❍ 1986–1990 ❍ 1995–present

31. Do you have any children age 21 or younger living in your home?

❍ Yes ❍ No

32. What other types of clubs do you belong to in the Dayton area? (Please mark all that apply.)

❍ Another Golf/Country Club ❍ City/Dining Club ❍ Fitness/Health Club
❍ Swim/Tennis Club ❍ Fraternal Club ❍ None

33. How much of the year do you reside in the Dayton area?

❍ Year round ❍ 6 to 8 months
❍ 9 to 11 months ❍ Less than 6 months

Written Comments and Suggestions

Please provide any comments and suggestions you may have regarding the FUTURE DIRECTION OF THE CLUB:

If you could improve EXISTING OPERATIONS OR SERVICES at the Club, what would you improve?

What do you feel NCR Country Club needs to do to ATTRACT MORE MEMBERS?

The Board of Trustees thanks you for helping us in the evaluation of your Club. Please send the survey back to the McMahon Group in the enclosed envelope.

Very truly yours,

McMahon Group, Inc.

Overdue Bills



Your employer, Quick Stab Collection Agency (QSCA), is a bill-collecting agency in an eastern town. The company specializes in collecting small accounts. QSCA does not deal in large accounts and does not take on risky collections, such as those in which the debtor tends to be chronically late in payments or is known to be hostile.

To distinguish itself from competing collection agencies, the company wants to establish a reputation for collecting delinquent accounts fast. The marketing department has just suggested that QSCA adopt the slogan "Under 60 days or your money back!!!!!" At the last staff meeting in which this slogan was proposed, the marketing department was asked how it arrived at the number 60. You found the reply unsatisfactory at best: "Well, uh, 60 sounded like a nice round number."

Since you work as an accountant at QSCA, you look at account balances all of the time. In fact, you suspect that the number of days to collect the payment is related to the size of the bill. If this is the case, you may be able to estimate how quickly certain accounts are likely to be collected, which, in turn, may assist the marketing department in determining an appropriate level for the money-back guarantee.

To test this theory, you've taken a random sample of accounts closed out during the months of January through June. The data set includes the initial size of the account and the total number of days to collect payment in full. Because QSCA deals in both household and commercial accounts in about the same proportion, you've collected an equal number from both groups. The first 48 observations in the data set are residential accounts and the second 48 are commercial accounts.

The data are in the file named OVERDUE on the accompanying CD.

Variable	Label
LATE	Number of days payment is overdue.
BILL	Dollar amount of the overdue bill.

Questions

1. What must you do during data preparation to enable you to compare commercial and household accounts?
2. Is the "60-day" money-back guarantee supported?

Source: Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

Performance Evaluations



Ann, an independent contractor who specializes in human resources issues, has been asked by the XYZ company to undertake an independent study of its employee performance evaluation practices. XYZ, a nonprofit organization, is a professional review organization in the health care industry. Most of its revenue comes from government contracts for Medicare and Medicaid utilization reviews.

The employee performance appraisal involves a fairly complex mix of subjective and objective scoring. Each evaluator fills out a form that covers 11 categories of employee performance, such as adaptability, accountability, communication and

decision-making skills, sensitivity to cost-effectiveness issues within the organization, attendance, and training and development of other employees.

Nonsupervisory personnel are evaluated on 8 of the 11 categories; supervisory and management employees are rated on all 11 categories. The same form is used for all employees, although the weight applied to each category varies with the employee's grade and responsibilities. Weights are assigned in such a way that any employee can receive a final score anywhere from 0 to 200. Higher scores mean better performance.

Each employee has an evaluation initiated on the 12-month anniversary of his or her hire date, so evaluations go on at XYZ throughout the year. Any employee who is a new hire, has been transferred between departments, has been promoted, or has been demoted is considered to be on probation. These employees are given three-month evaluations in addition to the annual evaluations.

Accurate performance appraisals are important. They provide feedback on an employee's contribution to the company, and the annual appraisal score is used to determine merit raises. When this appraisal system was introduced several years ago, evaluators attended extensive training sessions designed to ensure as much consistency and fairness as possible. In spite of this, employee complaints continue to surface. Ann's job is to uncover any nonwork-related biases in the evaluation process.

Concerns expressed by the employees at XYZ include the following.

- Evaluators are occasionally late with their evaluations. Rumors at the company suggest that the later the evaluation, the lower the score, as the manager may be attempting to postpone a controversial or hostile discussion with the employee about poor performance.
- There may be interdepartmental biases. Some managers may be attempting to raise their own department's status and salaries by artificially inflating the evaluation scores.
- Scores may be bumped up a few points to push a favored employee into the next higher raise category.

Variable	Label
SCORE	Evaluation score in points.
LAG	Difference between the due date of the evaluation by the manager and the day on which the results are discussed with the employee, in days.
EMP@EOY	Years with the company at the end of the year.
POS@EOY	Years in the current position at the end of the year.
TYPE	Type of evaluation (0 = 3 month evaluation, 1 = annual evaluation).
GRADE	Employee's grade scale: 1–7 are clerical or technical; 8–9 are skilled employees; 10–12 are supervisory; 13–17 are management.
DEPT	Employee's department number.
EDUC	Employee's education level: 12 is high school grad; 13 is one year training beyond high school (e.g., secretarial training); 14 is two years beyond high school (i.e., associate's degree, nursing diploma); 16 is bachelor's degree; 18 is master's degree; 20 is Ph.D.
EMP@EVAL	Years with the company at the time of the evaluation.
POS@EVAL	Years in the current position at the time of the evaluation.

- Three-month probationary evaluations are considered unnecessary by the employees, because three months is generally not enough time to adjust to a new position or reach the peak level of efficiency in a new job.
- There are rumors that the company is attempting to force early retirement by giving the long-time employees lower scores than others.

Ann has a sample of 144 employee evaluations conducted over the past calendar year; 10 variables were collected from each employee record as described below. The first 125 observations in the data set on the accompanying CD refer to employees who were still employed at XYZ at the end of the year; the remaining group left the company at some point during the year.

Question

1. What should Ann recommend?

Source: Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

Ramada Demonstrates Its *Personal Best*

In 1996 the latest D. K. Shifflet survey of customer satisfaction in the hospitality industry showed mid-tier hotels continuing their downward trend in perceived customer service, reflected by more and more respondents giving ratings on customer service in the 7 or lower range on Shifflet's 10-point scale. While Ramada's satisfaction rates held steady, "It was only a matter of time before we experienced the problem," says Tim Pigsley, director of operations for Ramada Franchise Systems (RFS). Shifflet research highlighted three critical areas for study that could influence customer satisfaction: hiring (finding the best people to deliver Ramada's brand of exceptional service), training (giving employees the tools to deliver exceptional service), and motivation (providing the impetus for Ramada employees to deliver exceptional service).

Unlike some of its competitors, RFS is a totally franchised system. In such an environment, not only must headquarters contend with the variable human factor of all service operations, but additionally, RFS must contend with differing "exceptional service" standards among owners of the nearly 900 Ramada properties. "Due to the franchised system of property management, we needed for each management team and each employee to be committed to the change—to buy in to any new program—whatever shape it would take," explains Pigsley.

Research

"We wanted to learn and borrow from the best so we started with Disney. In every study done, the Disney experience is the benchmark for exceptional customer service. And they have a reputation for hiring the best people." Next, RFS approached Southwest Airlines. "They have captured the essence of 'fun' when air travel is seen as a commodity, a hassle. People disembarking Southwest planes have smiles on their faces," shares Pigsley. Next Ramada's fact-finders approached Carlson Hospitality, owners of restaurant TGI Friday's. "We wanted to understand what Carlson did to generate their low employee turnover, and high employee loyalty and commitment."

Ramada's individual property owners do their own hiring. The process differs widely from property to property. Ramada called on research firm Predictive Index to identify characteristics that were indicative of self-motivated performers. Ramada also brought in American Hotel and Motel Educational Institute to learn what other companies were doing correctly to identify and hire the right people.

RFS also wanted direct, face-to-face employee input into the process of developing new programs in hiring, training, and motivation. "But this was a daunting prospect with more than 31,000 employees, many of whom spoke a language other than English," explains Pigsley. Twenty-four researchers spanned out to visit each of Ramada's 900 properties within a six-month period. "To bring about change in corporate culture and mindset would take more than employees checking off boxes on a piece of paper," claims Pigsley. So Ramada launched the research project more like the opening of a new hotel—a festive atmosphere, complete with food and comedic entertainment. Headquarters staff arrived at each property, usually spending the morning extracting issues and information from management. Then in an atmosphere evocative of a new hotel launch, employees were invited to share their ideas and concerns about the three initiatives. Employee suggestions and needs flowed as freely as the food and beverages. The information collection team recorded employee and management input on a detailed summary form generated for each property.

Research with employees revealed the current training approach was boring and ineffective. Most training involved videotapes, developed internally or purchased, with new hires or groups of employees watching the videos. RFS's benchmarking research with the hospitality industry's stellar examples of exceptional customer satisfaction, however, demonstrated that training incorporating high employee involvement generates more knowledgeable employees, one of the critical elements of customers' perceptions of higher quality customer service. And training approaches that involve "fun" are winners with all employees—no matter what position they fill—and are more likely to generate a positive employee attitude, a second critical element of exceptional customer service.

It was standard industry practice for employee motivation programs to develop around a limited number of big-ticket rewards. Employees indicated that they had a hard time maintaining enthusiasm for a program that took too much effort to achieve one or a limited number of rewards over a long time. RFS found that more numerous awards that directly affect their everyday lives motivate employees.

Before Ramada started on its program of change, it knew it would need to document the program's success. So it hired Unifocus to conduct in-depth guest surveys at every property as the *Personal Best* program rolled out. Additionally, it continues to subscribe to D. K. Shifflet's syndicated research on customer satisfaction.

Management Decisions

In hiring, Ramada property managers now screen prospective employees for characteristics revealed by Predictive Index. RFS scrapped its traditional training, replacing it with interactive, CD-based, multimedia training. Self-paced learning now drives the lighthearted, 24-component training sequence. Property managers, who often do not hire large numbers of employees at any one time, are pleased with the more flexible approach and employees find the process more interesting.

The newly devised motivation program focuses on rewarding employees, not only for exceptional performance reflected in customer letters and surveys, but also for supervisor and peer nominations, completion of training modules, and continued self-directed efforts for personal development by employees. "We had had grandiose ideas of awarding big-ticket items like airline tickets to the vacation of a lifetime, but after listening to employees, we substituted certificates for shoes at FootLocker, lunch at Macaroni Grill, and free tanks of gas. We literally have hundreds of reward partners in the *Personal Best* program," reveals Pigsley, "all related to the way our 31,000 employees spend their personal time."

By many standards the *Personal Best* initiative is a success.

- In the latest D. K. Shifflet service ratings, Ramada's scores in the 8–10 range (good to exceptional) were up 30.5 percent, and its scores in the 1–4 range (unacceptable to poor) were down 24 percent.
- Employees are cashing in exceptional service points for a growing number of rewards each year.
- *Personal Best* is no longer just a human resources program but an overall strategic planning initiative. Employees' stories of exceptional customer service are prominently reflected in Ramada's advertising, and RFS has committed $8 million over the past three years to sharing these stories.

"Ramada's *Personal Best* hospitality advertising campaign (winner of the travel industry's most prestigious advertising award: HSMAI's Best of Show) is a reflection of our commitment to the employee of Ramada franchises," says Steve Belmonte, president and CEO of RFS, Inc. One spot's closing line, "At Ramada, we throw ourselves into our work," sums up the effort that Ramada is placing on customer satisfaction—an effort that won it the 1999 American Express "Best Practice" award.

Questions

1. Build the management-research question hierarchy for Ramada.
2. Apply the research process model to the Ramada research initiative.
   a. Explain the role and process of exploration in Ramada's research.
   b. What role did secondary data play in the exploration phase of the research?
   c. What steps and phases in the process model can you match to the Ramada research?
   d. What research process decisions were made? (Remember to include research by outside suppliers.)
   e. What sampling methodology was used? Why was this appropriate for this study?
   f. Describe the research design and discuss its strengths and weaknesses.
   g. What role did property owners/managers play in the research design?
   h. Why did Ramada choose to conduct the research in a nontraditional, party-like atmosphere? What are some advantages and disadvantages of such an approach?
3. How are the research findings reflected in the ultimate management decisions?

Source: This case was developed from interviews with and material provided by Tim Pigsley, director of operations for Ramada Franchise Systems. Used with permission of Pamela S. Schindler and Donald R. Cooper, © 2001.

Retailers Unhappy with Displays from Manufacturers

Supermarket executives are unhappy with manufacturer-provided displays, according to a recently released study by the Howard Marlboro Group (HMG), New York.

Of the 129 members of HMG's Retail Advisory Board who were surveyed, 60 percent indicated they were at most marginally satisfied with their current racks.

Reasons for dissatisfaction included such things as the racks were ineffective for inventory control, they used space poorly, and they did not aid consumers in shopping, the study said. Retailers also noted many of the racks were unattractive and did not fit their store's décor.

Although supermarket executives were not enthused with most manufacturer-provided racks, they rated L'eggs displays the best, the study said. The retailers indicated the racks had a "consistent presentation and appearance," and that the company showed its support by regularly providing renewal parts for the displays, according to the survey.

HMG also questioned retailers on their use of interactive merchandising systems (IMS).

Forty-five percent of the retailers already use at least one IMS, and these displays are used in a variety of departments, the study said, including generic grocery, meat and seafood, spices, and electrical and hardware.

Seventy-seven percent of the retailers surveyed said IMS use will continue to increase, the report found, and 93 percent were interested in learning more about the systems.

Raid, the popular insecticide, has developed an Insect-A-Guide to help people learn about the pests they're trying to kill. The in-store display features various Raid products arranged under a color code to help consumers pick the right spray for the right bug. A flip chart gives information on the habits of insects and suggests ways to "knock 'em dead." The unit, designed by the Howard Marlboro Group, New York, can be arranged in three configurations to accommodate various store sizes.

Question

1. Design an experiment to test the new display for Raid. Be sure your design will test for both customer and retailer satisfaction with the display.

Source: "Retailers Unhappy with Displays from Manufacturers" (October 10, 1988, p. 21), used with permission of *Marketing News*. Case notes used with permission of William R. Dillon, Thomas J. Madden, and Neil H. Firtle, *Marketing Research in a Marketing Environment*, 3/e, 1994, Irwin. Used with permission of The McGraw-Hill Companies.

Rubbergate



Frank works as the statistician for a large lobbying group based in Washington, D.C. His job is to collect all sorts of data for his firm, prepare various reports and summary statistics, and serve as a spokesperson for the group whenever necessary.

The House banking scandal (dubbed by the media as "Rubbergate") has created quite a bit of talk within Frank's firm. The Rubbergate scandal has disillusioned a large number of U.S. voters, who believe that part of the current economic crisis is related to the lack of fiscal responsibility on the part of their chosen representatives. The CEO of Frank's firm suspects that the public outrage over bounced checks will cause a significant turnaround in upcoming elections. Needless to say, the firm does not wish to commit time or resources toward lobbying Congresspersons who will not likely be in office in the near future.

Frank has collected a random sample of 146 members of the 1992 House of Representatives, which may be found in the file named RUBBERG8 on the accompanying CD. Eight characteristics were collected about each representative.

Questions

Frank must prepare a report that characterizes the data set. In particular, what are Frank's responses to the following questions?

1. What is the general nature of the sample in terms of average and typical fluctuation around the average for the variables named SERVICE, AGE, VOTES, DISTRICT, and STATE?
2. How do these variables differ in a comparison of check-bouncers and check-nonbouncers?
3. How does party affiliation enter into the analysis?

Variable	Labels
CHECKS	Whether the representative wrote bad checks (1 = bad check; 0 = no bad checks).
PARTY	Political affiliation: 1 = Democrat; 0 = Republican (no independents are in the sample).
SERVICE	Total number of calendar years in service in the House of Representatives (service beginning in November or December is not counted as a year).
AGE	The representative's age in years.
VOTES	The percent return for the most recent election in which the representative participated.
DISTRICT	Population of representative's home district in thousands to the nearest thousand.
STATE	Population of the representative's home state.
BADCHKS	Number of bad checks written.

4. For those individuals who did write bad checks, summarize the total number of bad checks written in some appropriate fashion.

Source: This case is based on data provided to us by Chris A. Wilson. The data come from three sources: *Politics in America*, Congressional Quarterly, Inc., Washington, DC, 1991, pp. 9–12; *Vital Statistics on Congress 1991–1992*, Congressional Quarterly, Inc., Washington, DC, 1992, pp. 214–231; and *Rocky Mountain News*, "The House List," Friday, April 17, 1992, pp. A50–A51. Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

State Farm: Dangerous Intersections

State Farm Insurance has a rich history of proactive safety involvement in auto and appliance design to reduce injury and property loss. In June 2001, State Farm Insurance, Inc., released the second report in its Dangerous Intersection reporting series. State Farm modeled its program after an initiative by the Insurance Corporation of British Columbia, Canada (ICBC), and the American Automobile Association of Michigan (AAA) to help position the nation's largest auto insurer as the most safety-conscious insurer. ICBC had patterned its program on an earlier effort in Victoria, Australia. AAA, in turn, benchmarked its program on the ICBC program. AAA invited State Farm to help fund one of its intersection studies. State Farm saw this as an opportunity to expand its effort into a nationwide campaign in 1999. "The 2001 study is part of a larger effort focused on loss prevention and improving the safety of intersections around the U.S.A.," shared State Farm research engineer John Nepomuceno. State Farm has allocated significant resources as well as funds to the initiative. Since its inception, every city with an intersection on the overall list of dangerous intersections is eligible to apply for a $20,000 grant to defray the cost of a comprehensive traffic engineering study of the intersection. Additionally, each city named to the national top 10 dangerous intersection list is eligible for a grant of $100,000 per intersection to defray

some of the cost of making improvements. All totaled, State Farm offered $4.44 million to the safety initiative in its first year.

Due to its large market share, State Farm is the only U.S. insurer in a position to mine its databases for the requisite information on accidents to come up with a viable U.S. list. But it found that although it had the interest to do so, its data warehouse did not have sufficient information to tally accident rates for intersections. To rectify this, in 1998 State Farm included a location field as part of the data that its claims adjusters regularly complete. This location information, in open-text format, indicates whether the accident took place in an intersection or as part of an incident related to an intersection accident, and identifies the intersection. Following the 1999 study, the fields for identifying intersections were further refined.

In the first study using 1998 data (reported in June 1999) as well as the 2001 study, State Farm looked at accidents involving only intersecting roads. They excluded any accident that occurred at the intersection of a road and a highway access or egress ramp. State Farm also looked only at accidents where the State Farm–insured driver was at fault.

Because of the study's focus on road safety engineering, the first study ignored accident severity and made no attempt to isolate demographic (age or gender of driver, driving record, etc.) or geographic (weather conditions, population of area, etc.) factors related to the accident. It also looked only at State Farm's own internal incident reports, not at any public records involving traffic patterns or volume or police incident reports. Based on industry market share information, State Farm was able to estimate the total number of crashes at a given intersection. "There was good reason to exclude police reports and traffic counts," explained Nepomuceno. "The reporting threshold for police filing reports on accidents differs widely from jurisdiction to jurisdiction. Some will only fill out reports when personal injury or criminal behavior is involved. Others will fill them out only when a vehicle is damaged to the degree that it needs to be towed from the scene. Still others fill out such reports on every incident. Traffic volume reports are often prepared infrequently and often by independent sources. Not only may the data quality be questionable, but the time period in which the data was collected may not match our 1998 incident reports in every city involved. Also, when traffic volumes are factored in, low volume roads with relatively few crashes are often deprioritized. Now that we're through with the 2001 study, we are asking ourselves if intersection volume should be factored in, and if so, how it can be included without significantly increasing our effort in data processing."

In the 1998 study, State Farm identified 172 dangerous intersections. The top 10 most dangerous intersections in the United States were released publicly (www.statefarm.com). Public affairs staff for each state could request that up to 10 intersections be identified for their state. "This was usually determined by the resources that our local public affairs staff were willing to put toward the program," shared Nepomuceno. "Each state had to recognize a top 10 national intersection, but they could request that no more be released or that up to 10 intersections within their state be released." As of August 2001, 97 cities (56.4 percent) had applied for State Farm grants.

"While some in the media claimed we had 'hit a home run' with the program, we quickly learned that there was a lot more at stake than we had anticipated in generating goodwill with transportation engineers," indicated Nepomuceno. "This is, after all, a traffic safety program and we would not achieve that goal without having the cooperation of the traffic and transportation engineering community. First, while initially they lauded us for the attention our listing brought to traffic concerns, we and they soon discovered that the spotlight generated demand for immediate solutions, solutions that they often didn't have budgets to implement. Also, from their perspective, not all

accidents are the same; locations with accidents that result in injuries and death should be given more attention. Some jurisdictions were upset that we didn't consider intersection volume and we didn't include accident rate data.[1] The fact that the State Farm grants were intended to study the intersection more completely wasn't always seen as a solution to their immediate problems."

To include accident severity, State Farm needed a measurement system for classifying accidents. For the 2001 study, which used 1999 and 2000 accident data, State Farm calculated a median property damage accident payout (approximately $1,700). Incidents requiring payout of more than the median amount were classified as "high severity"; those requiring less, "low severity." Additionally, State Farm chooses to classify each accident using a multipoint scale. Zero was assigned to "no property damage, no personal injury" incidents and a higher number was assigned to "High property damage, personal injury" incidents, with numbers in between assigned to levels of property damage and personal injury (see Exhibit C-SF 1–1). Accident scores were summed to create an aggregate danger index for each intersection. Each intersection was then weighted by dividing the danger index by State Farm's market share in the area. Of the 224 intersections identified, the top 10 were released to the national media. Each of those 224 is now eligible for the $20,000 grant to study the intersection to identify specific improvements; the top 10 are also eligible for $100,000 grants for improvements. In this second round, State Farm has committed $5.48 million to the safety program.

State Farm is making plans to track the success of the Dangerous Intersection program. Once cities notify them of the completion of an intersection's improvements, State Farm will start tracking accidents for that intersection for a period of one year. The first post-improvement evaluation study is expected in 2002. Additionally, State Farm is taking steps to learn from the characteristics of the dangerous intersections. Each grant application for an affected city's study of a dangerous intersection must include:

- Collection and analysis of police report data.
- An engineer's "geometric review"[2] of the intersection.
- A capacity profile of the intersection.
- A traffic conflict study.[3]
- A benefit-cost analysis.
- A schedule of improvements (short-term, intermediate-term, and long-term).[4]

State Farm plans to use the new data to identify patterns of problems. This may lead to a model of desired intersection traits against which improvement plans can be assessed, further increasing the effectiveness of the loss prevention program and making life a little easier for the transportation engineers with whom they must partner to achieve safety success.

EXHIBIT C-SF 1–1 Danger Codes

	No Personal Injury	With Personal Injury
No property damage	0	Y
Low property damage	1	$1 + Y$
High property damage	X	$X + Y$

Questions

1. Identify the various constructs and concepts involved in the study.
2. What hypothesis might drive the research of one of the cities on the top 10 dangerous intersection list?
3. Evaluate the methodology for State Farm's research.
4. If you were State Farm, how would you address the concerns of transportation engineers?
5. If you were State Farm, would you use traffic volume counts as part of the 2003 study? What concerns, other than those expressed by Nepomuceno, do you have?

Sources: This case is based on information provided by John Nepomuceno in interviews that took place on August 9, 2001, and September 13, 2001. Other sources include: "Miami Area Intersection Tops State Farm List of Most Dangerous in the United States," State Farm press release, June 27, 2001 (http://www.statefarm.com/media/release/danger00.htm); "Research" (http://www.statefarm.com/media/methods.htm); and "State Farm 1999 Dangerous Intersection National Status List" (http://www.statefarm.com/media/statustop.htm); and "State Farm's Dangerous Intersection Initiative," Institute of Transportation Engineers press release, June 27, 2001 (http://www.ite.org/press_release.htm).

NOTES

1. Accident rate is calculated by dividing the number of accidents in a given period by the total traffic volume over the same period.
2. The intersection geometry or physical layout of the intersection can play an important role in influencing driver behavior at intersections. For example, a curve on the approach to an intersection may impede the sight distance to a traffic signal, preventing drivers from stopping in time. Or, a driver approaching two signalized intersections very closely spaced may see the traffic signals at both intersections and become confused about which traffic signal to obey.
3. A traffic conflict study is an observation study of traffic conflicts that do not necessarily end in an accident but have the potential to do so. Recording and studying observations of driver behavior is expected to help traffic engineers understand the same problems that result in collisions. Some examples of conflicts are the sound of sharply applied breaks; sudden, unsignaled lane changes; or drivers hitting their horns.
4. Short-term improvements might include sign changes, changes in lane markings, or signal-timing changes. Most short-term improvements can be implemented in less than two years. Intermediate-term improvements might involve lane widening, the addition of turn lanes, etc., and be accomplished within 2–5 years. Examples of long-term improvements include grade separation of the intersecting roads and can take 5–10 years to implement.

Sturgel Division

"Now that I write it all down, I see we have changed a lot!" mused Martha as she put the finishing touches on her annual status report. "In fact," she went on, "the name Information Services indicates most of the changes. We used to be Information Systems."

Martha was Information Services (IS) manager for the Sturgel Division of a major manufacturing company. Sturgel developed and manufactured (mostly small) household appliances on a 230-acre site in the southeast part of the United States. While she had managed the IS department for only 15 months, Martha had been part of the department for nine years, all at the same location.

The late 1980s and early 1990s were a time of many changes for the information systems departments in most companies, including the Sturgel Division. Technological change drove most of the organizational change: The price performance of most computer equipment had improved by compound rates of perhaps 30 percent per year for several decades. This meant that many companies perceived that they no longer needed a "computer center." Individual users could simply do whatever they needed to do on a desktop computer in their own offices.

Martha made a rough list of the major influences she'd dealt with over the last few years, calling them "IS Transitions." They included:

- From running the computer to providing information services to the company.
- From "owning" the data to consulting with user departments about use of the company's information resources.
- From emphasizing mainframes to emphasizing terminals, personal computers, and telecommunications. Indeed, sometimes it seemed that the telephone, word processing, and clerical and library departments had all been combined.
- From developing the company's applications to advising users on how to develop their own applications.

Each transition had been difficult for each required its own combination of hardware, software, data, procedures, and people, most of which were different at the end of the transition.

Currently, the Information Services department had four sections, each with a manager who reported to Martha:

1. **Systems operations.** The systems operations section ran two mainframe computers and one minicomputer that operated as a telecommunications "node" and link to other divisions and corporate headquarters. This section provided operator support for three shifts of operation, as well as systems maintenance, operating system updates, and so forth. The vendor of the mainframes handled hardware maintenance.
2. **Application development.** The application development section really should be renamed, Martha thought. Most of its activities involved database design and maintenance, though two small groups developed financially oriented applications and maintained several software packages aimed at serving the (fairly small) engineering staff at Sturgel.
3. **PC services.** The PC services section developed division standards for personal computers at Sturgel and consulted with users who wanted PCs of their own. The users purchased PCs out of their own budgets, but they were required to meet certain hardware and software standards as set by IS. This section also evaluated general-purpose software, such as word processing and spreadsheet packages, and recommended to users when they should switch to a new version or release. They also did a fair amount of "hand holding" for users who had difficulty in developing their own applications.
4. **Telecommunications.** The telecommunications section maintained the local area network at the Sturgel site as well as links to corporate headquarters and other company divisions. This section also advised users on such activities as links to legal databases and information retrieval services, though that activity, thought Martha, might really fit better in the application development section.

Martha felt good about the organization in general. While it had been a bit of a scramble to develop an organization that could deal with the fast pace of technological change in the computer field, she felt they had more or less done it. One part of it still made her nervous, though. The biggest theme in all the changes, from an IS perspective, was the change from computing and running computers to serving large numbers of people directly.

She felt they were providing good service, but she had no regular way of knowing how her users perceived it. She thought she should consider a regular survey of her users and their perceptions of service received from the IS department. That way, she

figured, she would be in a position to have data to back up her informal sense, and she would (presumably) learn about changes in those perceptions (for better or for worse) more quickly.

Questions

1. Martha would like you to develop an appropriate research design.
   a. What kind of survey should Martha run, or should she?
   b. How should it be administered?
   c. What kinds of forms, questionnaires, or other survey approaches should be developed?

Source: Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

The Brazing Operation



In one of the phases in manufacturing a precision flow meter, a vacuum brazing process is used to attach hardware to the flow meter tube. The process consists of placing the "fixtured" assembly in a sealed vacuum furnace, pumping a hard vacuum on the furnace, slowly heating the assemblies to approximately 2050 degrees Fahrenheit, and then rapidly cooling them down to the ambient temperature.

The company wants the assembly to have a metallurgical structure that resists corrosion. One aspect of such a structure is a good grain size, a measure of the size of the actual crystals in the crystalline structure of the flow wall. The grain size is measured by a standard specification called the grain count, a numerical reading between 1 and 10. The larger the grain count, the finer the crystalline structure (and the more corrosion resistant).

The data on the CD in the file BRAZING were gathered from process control charts. The run numbers are not consecutive because a variety of operations, not just the brazing operation, are performed in the furnace.

Variable	Label
RUN	Run number.
TEMPAVE	Average maximum temperature (degrees Fahrenheit).
TIMEAVE	Average time at the temperature (minutes).
VACLEVEL	Vacuum level (in torr units, higher numbers indicate a poorer vacuum).
COOLRATE	Cooling rate, in degrees Fahrenheit per minute.
GRNCOUNT	Grain count, in standard units, computed from a sample of the resulting product.

Question

1. Based on the data, what recommendations do you make concerning the brazing process?

Source: David R. Berge provided the data on which this case is based and described the manufacturing situation. Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

The Catalyst for Women in Financial Services

In 1996 Pamela K. Martens, Judith P. Mione, Roberta O'Brien, and 22 others filed a class action suit in U.S. District Court, New York, against Smith Barney and former Garden City, New York, office manager Nicholas Cuneo, citing a rash of complaints. These included "intimidation, retaliation, and humiliation," as well as lack of fairness in pay, denial of promotion, demotion due to maternity leave, unfairness in distribution of accounts, sexual harassment, and discharge without cause. Initially Cuneo was discharged, but when the plaintiffs did not drop their suit, he was reinstated as a sales agent. In May of 1998, Judge Constance Baker-Motley approved a settlement, which had been accepted by 23 of the 25 plaintiffs.

As part of the settlement in *Martens, et. al. v. Smith Barney* (S.D.N.Y., 96 Civ 3779), Smith Barney was charged with paying for a study of the issues underlying the suit. The female judge ordered a research project done by "Catalyst or other similar firm," one which understood the issues under study. "Catalyst is a nonprofit research and advisory organization working to advance women in business," shared project director Paulette Gerkovich. "There are no other firms that do exactly what we do, so we were the clear choice."

Catalyst, a New York firm, was hired and directed the subsequent research project designed to accomplish five goals:

- To assess employees' perceptions of their work environments.
- To examine why employees seek careers in the financial services industry, why they stay, and why they might leave.
- To examine the connection between perceptions of the work environment and job satisfaction, job commitment, and employees' intent to stay with their firms.
- To determine what barriers women face in advancing within their firms.
- To assess how employees balance the demands of work and personal life.

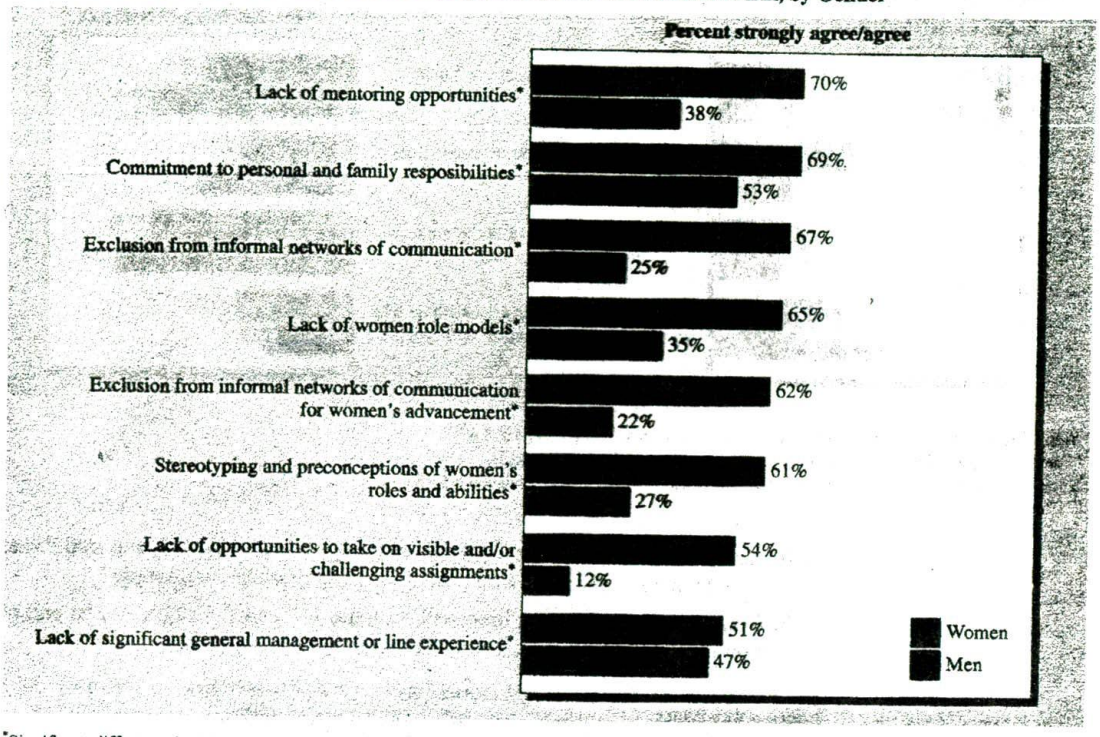
"Our prior research with women's issues provided several tested measurement questions that were suitable to use in this study," explained Gerkovich. Catalyst also conducted nine focus groups—two all-men, six all-women, and one mixed-gender group—to add insight to developing other measurement questions and clarify numerous concepts and constructs. At no time during the research did the plaintiffs, defendant, or the court influence the process.

Catalyst mailed the survey to approximately 2,200 potential respondents, men and women employed in the financial services industry. A second mailing was sent to the whole sample frame to increase the participation rate. 838 (38 percent) members of the sample responded, 482 women (57.5 percent) and 356 men (42.5 percent).

"Our prior research led us to believe that a gender gap would exist between men and women on some fundamental issues. So men's opinions were sought to give the women's opinions a context," said Gerkovich.

To measure job satisfaction, Catalyst used a multiple-item evaluation including current position satisfaction, satisfaction with employer, work schedule control, career advancement opportunities, opportunities for networking and mentoring, and compensation fairness. Only on "opportunities to network with influential clients" and "compensation fairness" did men and women differ significantly ($p < .05$). Women's greater dissatisfaction with these two constructs did not, however, significantly affect their overwhelmingly positive satisfaction with their current position and their employer (77 percent and 74 percent, respectively).[1]

EXHIBIT C-CATALYST 1–1 Barriers to Advancement of Women at Current Firm, by Gender



*Significant difference between women and men, $p < .05$.

"Because of our interest in advancing women in management, we were particularly interested in the factors that might lead a qualified woman to leave the profession," said Gerkovich. The executive summary of the findings noted: "Money appears to be a critical driver of intent to stay, both for men and women."

To assess barriers to advancement, Catalyst used a multiple-item 5-point scale exercise. As Exhibit C-Catalyst 1–1 shows, women's perceptions were significantly different compared to men's for almost all of these items.

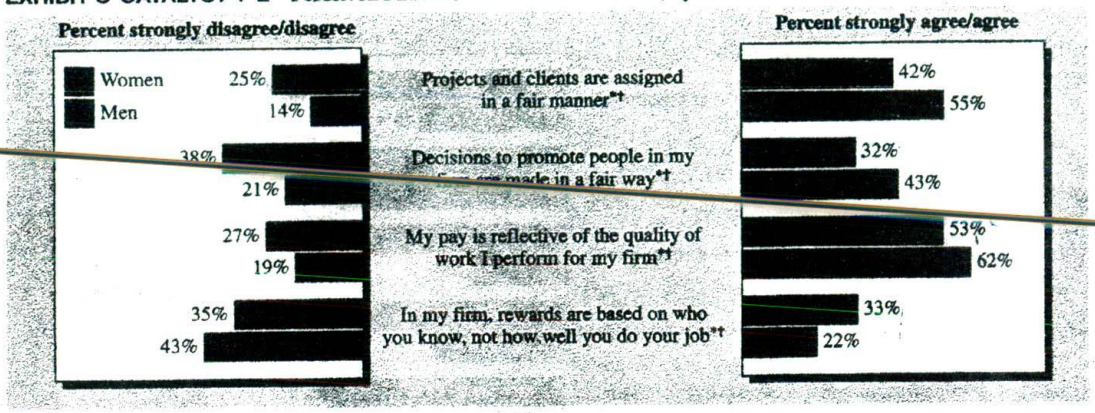
As Exhibit C-Catalyst 1–2 shows, on four elements used to assess fairness (assignment of clients, opportunities for promotion, pay for performance, and rewards for performance), women again had significantly different perceptions compared to men ($p < .05$).

Court-ordered research, while not commonplace, has certainly become an accepted part of legal remedies. This study is now a benchmark measure for the financial services industry. While Smith Barney agreed to improve conditions as part of the settlement, the court did not mandate a follow-up study.

Questions

1. Discuss the potential conflicts between researcher (Catalyst) and research user (Smith Barney).
2. What constructs and concepts are inherent in this study?
3. What are the ethical considerations in this study?
4. Speculate on how the researchers created operational definitions for the constructs.

EXHIBIT C-CATALYST 1–2 Perceived Fairness of Reward Allocation, by Gender**



*Significant difference between women and men who strongly agree/agree, $p < .05$.
**Percent respondents choosing "neither agree nor disagree" not reported.
†Significant difference between women and men who strongly disagree/disagree, $p < .05$.

5. Assume that the limited findings presented here are all the study covered. What would you recommend that Smith Barney include in a follow-up study?
6. Evaluate the data displays in exhibit C-Catalyst 1–1 and C-Catalyst 1–2 as part of a research report. What recommendations, if any, would you make?

Sources: *Executive Summary, Women in Financial Services: The Word on the Street,* July 2001; and Interview with Paulette Gerkovich, project director, Catalyst, August 9, 2001.

NOTE

1. *Women in Financial Services: The Word on the Street.* Executive Summary, Catalyst, NewYork ©2001 (ISBN#0-89584-219-X), p. 4.

T-Shirt Designs



Julio has one semester left in his MBA program and is looking at paying back some hefty student loans. Even though he has had to borrow money to complete the program, he's decided it was a worthwhile investment. Nonetheless, Julio would like to repay some of his loans before graduating, if at all possible.

Julio has recently taken entrepreneurial and small-business classes and has decided to put some of this knowledge to work. He suspects that a number of his fellow students would be willing to shell out a few bucks for school memorabilia. Since summer is right around the corner, Julio is pretty sure that he can make some money by selling t-shirts to students on campus.

Informal conversations with people in the hallways have given him some ideas about popular t-shirt designs. Julio has narrowed down the possibilities to two. He's given sketches to a local t-shirt printing company, and they have made two prototype shirts. At this stage, Julio has no idea about the relative demand for the two t-shirt

T-Shirts Survey Questionnaire

I am trying to measure people's preferences for one of two different t-shirt designs. Please help me with my study by answering each of the following questions to the best of your ability. Do not put your name on this page because all responses should be anonymous.

1. My gender is

   1 = female

   0 = male

2. My current or most recent scholastic grade-point average on a 4-point scale is _____.

3. Circle the number that most accurately describes your attitude about the red and white t-shirts on the table.

   1 = I strongly prefer the red t-shirt to the white t-shirt.

   2 = I somewhat prefer the red t-shirt to the white t-shirt.

   3 = I like both equally, or am indifferent between the two.

   4 = I somewhat prefer the white t-shirt to the red t-shirt.

   5 = I strongly prefer the white t-shirt to the red t-shirt.

4. I am _____ years old.

5. My gross annual income for 1993 was $____. (If you were not gainfully employed, enter 0.)

6. I am (circle one)

   1 = left-handed

   2 = right-handed

   3 = ambidextrous (both left- and right-handed)

designs. If he's going to all the trouble and expense of having the shirts made up, it would be useful to know which of the two shirts is more popular.

The two shirts look something like this. The red shirt has a scoop neck and is made of 100 percent cotton. On the back of the shirt is a logo of the school. Under the logo are the words "PARTY TIME at PU UNIVERSITY!" Julio suspects that this shirt will mostly appeal to the party-goers.

The other shirt is more conservative. It is a white, button-placket, collared t-shirt made of 50 percent cotton and 50 percent synthetic materials. This shirt has a simple, and small, version of the school logo on the upper right-hand section of the front of the shirt.

Julio has decided to gauge the relative markets for his two t-shirts by running a quick survey. With permission from the student government, he has set up a table in the student union. The two prototype shirts are there for inspection, along with a survey designed to gauge people's reactions to the two shirts. He has a big sign over the table offering a free soft drink to all participants to induce people to stop by the table and participate in the survey. On the corner of his table is a big cardboard box with a slit in the top. Students are instructed to put their completed questionnaires in the box, thereby guaranteeing anonymity of the responses.

The data set is on the accompanying CD in the file named T-SHIRTS.

Variable	Label
GENDER	Female = 1, male = 2.
GPA	Current grade point average on the 4-point scale.
PREFER	Preference of red or white shirt (1, 2 = red; 3 = neutral; 4, 5 = white).
AGE	Age in years at the time of the survey.
INCOME	Gross annual income for 1993.
HANDED	Left-handed (= 1), right-handed (= 2), or ambidextrous (= 3).

Questions

1. Reconstruct the management-research question hierarchy.
2. Evaluate the sampling design.
3. How would you judge the quality of the survey instrument? Explain.
4. Interpret the data in reference to Julio's management dilemma.
5. Prepare a report about the preferences revealed.

Source: This case was based on a survey designed by M. A. Smith, who also wrote the survey questionnaire. Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

Violence on TV



As the general manager of KTDS, the NBC affiliate in Tidusville, Oklahoma, Chris has a range of responsibilities that include programming, personnel, advertising, and public relations. His least favorite activity is responding to customer complaints. Unfortunately, there's been an unusually large number of complaints in the past few months from viewers and advertisers alike.

Most of the recent comments are objections to the level of violence on KTDS programs. Chris is sensitive to this issue because he has observed a gradual increase in violence on TV over the past 20 years. Chris really prefers the old-time movies in which dirty deeds were neatly sanitized and violent crimes occurred behind the scenes. He is sympathetic to the recent callers.

Nonetheless, he's in a tight spot. Chris knows that small, vocal groups do not necessarily represent the population at large. People who feel strongly about an issue are likely to speak out, while those who are content tend to remain silent. While the recent callers have denounced the level of violence on KTDS shows, Chris knows he must understand and serve *all* of the KTDS viewers.

Chris has a suspicion about the source of the recent calls. Four months ago, a flamboyant politician announced his candidacy for mayor. This candidate has received a great deal of air time on the local news due, in part, to his impassioned outbursts. Some people love him, others despise him, but almost everyone tunes in to the evening news in hopes of catching the latest controversy. One continuing theme of his platform is violence in America in general and violence on KTDS in particular. Over the past four months, the candidate has suggested that those opposed to violence in the media "let their voices be heard." Chris suspects that this fellow has inspired a large portion of the recent complaints to KTDS.

Chris needs to sort all of this out. To understand the views of all KTDS patrons, he has commissioned you to undertake an opinion poll. A survey has been designed, and

94 telephone survey responses have been compiled. The results of the survey reside in the file named VIOLENCE on the accompanying CD and the actual survey included in this case. You'll need a copy of the survey to understand the numerical codings in the data set.

The survey design and data set compilation were undertaken by Ann Lee Bailey, an MBA student at the University of Colorado at Denver. The scenario has been altered to preserve the anonymity of the survey respondents.

The survey was done over a three-week period in October. Two hundred phone calls were made, and 106 people declined the invitation to participate in the survey. Of the 94 participating respondents, 2 were offended by the question of income and refused to answer that particular question. Nonresponses are indicated in the data set by an asterisk. A random selection of phone numbers from the Tidusville phone book was used to select the sample. Chris needs a report as soon as possible.

Violence on TV Survey

1. Gender (0) male (1) female
2. Age (1) under 20 (2) 20–30 (3) 31–40 (4) 41–50 (5) over 50
3. Marital status (0) married (1) single or divorced
4. Do you have children at home? (0) yes (1) no
5. Household income

(1) under $20,000 (2) $20,000–$40,000 (3) $40,00–$60,000 (4) over $60,000

6. Education

(1) high school (2) some college (3) college graduate (4) graduate school

7. How many hours per week do you watch TV?

(1) 0–7 (2) 8–14 (3) 15–21 (4) 22–28 (5) 29–35 (6) 36–42 (7) 43 or more

8. In your opinion, how violent are most TV programs?

(1) much too violent (2) somewhat too violent (3) violent
(4) a little violent (5) not very violent

Questions

1. What is Tidusville's perception of the level of violence on KTDS?
2. Does one's perception of violence on TV vary with gender, age, marital status, income, or education?
3. Do parents with children at home have a different tolerance for violence than those without children at home?
4. Do viewers who spend a lot of time watching TV become desensitized to violence?

Source: Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics*, Irwin, 1995.

Waste Paper[1]



Waste accompanies any production process. Waste may provide opportunity, as Harvey Mackay points out, but usually it's a problem.

In this case, the production process is a printing press that produces small books for a variety of customers. Data from 127 runs of this press, gathered over about a month, are provided on the accompanying CD in the file WASTEPAP.

An analyst expected the following variables to be important (at least potentially) in determining waste.

Variable	Label
OBS	The recorded observation or printing job.
NET	Number of books requested by the customer.
GROSS	Total number of books actually produced to satisfy the customer's request.
WASTE	The number of books wasted (WASTE = GROSS – NET).
PAGES	Total number of pages in the book (8, 16, 24, or 32); 8- or 16-page books can be handled with a single "web" of paper; 24- and 32-page books require two webs.
PAPER	Basis weight (in pounds) of the paper used.
COLORS	Number of colors printed (four is standard, but occasionally a single-color run is made and other variations occur, too).

In pricing its four-color services, the company assumes a certain amount of waste. Currently it assumes a common "waste factor" for each of the different sizes of books (8-page, 16-page, etc.). Price quotes for other than four-color books are handled separately, but the analyst wants to know whether the "waste factor" really should be the same for all sizes of four-color books.

Question

1. How would you advise the analyst?

Source: This case is based on a real situation, described to us by Don W. Hansen, VP Operations, American Web, Inc., who also provided the data. Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics* (Burr Ridge, IL: Irwin, 1995).

NOTE

1. See Harvey Mackay, "Why Waste Waste?" in *Beware the Naked Man Who Offers You His Shirt* (New York: William Morrow and Company, Inc., 1990), pp. 238–39.

Workload Ratings



Many organizations use opinion surveys as one part of their evaluation of managers or executives. The people being evaluated often wonder how fair these processes are. In particular, they wonder if they will somehow get lower ratings if they strictly enforce rules or set high standards for work.

In universities the same problem affects instructors, who complain about the student evaluations of the instructors and their courses. In particular, they complain that when instructors make students work hard, the students give them low ratings. Is this really true? (The students, in turn, often wonder if anyone ever looks at the evaluations they fill out, but that's another story.)

All of the fall 1987 students enrolled in classes offered by the University of Colorado at Denver College of Business and Administration evaluated each class using a standard form prescribed by the University's Board of Regents. Students responded to 12 questions, each of which was scored from 0 to 4 (0 = "F", 4 = "A"), and the class averages for the responses to each question were tabulated. These tabulations were provided to the instructor and given to deans, department chairs, and to the student government, which published them for general review.

For each of the 161 sections, the class averages for three of the questions are available in the file WORKLOAD on the accompanying CD. All of the numbers given are class averages for particular sections offered in fall 1987.

Variable	Label
CRSRTG	Rating for this course compared with your other university courses.
WORKLOAD	Rating for the work required for this course. (F = too little = 0, C = about right = 2, A = too much = 4).
INSTRTG	Rating for this instructor compared to your other university instructors (0 = failing, 4 = perfect).

Questions

1. Do WORKLOAD and INSTRTG appear to be related, based on these data?
2. Do they appear related if we adjust first for the effects of the course rating?
3. Do these data support the rumors about instructors being penalized for making students work hard?

Source: Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics* (Burr Ridge, IL: Irwin, 1995).

Xerox Abuses



Your firm is located in a 10-story building. Each floor has its own Xerox machine in a copy room. The firm owns these machines but must pay for paper, toner, and occasional maintenance. Each employee has a key that opens the copy room door on his or her floor only and does not have access to Xerox machines on other floors.

Because the Xerox machines are "free goods" right now, you suspect that the firm's Xerox costs could be cut pretty drastically. To test this theory, you have decided to perform an experiment. Each person on the 10th floor has been given a card that operates

the 10th-floor machine. These employees have been told that their card will generate a daily accounting of their Xerox activity. Tenth-floor employees have also been told that they will not be *charged* for their use of the machine, but they certainly know that *someone* will have some sense of individual usage patterns.

To establish a basis of comparison, the group on the third floor has not been converted to the card system. The third-floor machine has an internal mechanism that totals the number of copies made each day, but you do not know *who* is doing *what*, and the third-floor employees have no reason to believe that they are being monitored. The 3rd and 10th floors have been chosen for this experiment because these two floors have had about the same usage rates in the past.

You have collected data from the two machines over the last 50 working days. The data are on the accompanying CD in the file named XEROX. This file has 50 observations and three variables:

Variable	Label
DAY	An indicator of the day data were extracted.
TENTH	The number of Xerox copies made on the 10th floor.
THIRD	The number of copies made on the 3rd floor.

Question

1. Use appropriate graphical or statistical techniques to determine whether the card accounting system will effectively lower inappropriate Xerox usage if implemented companywide.

Source: The scenario described in this case was related to the author by one of his students, who was employed at the firm when the Xerox machine experiment was undertaken. Used with permission of Peter G. Bryant and Marlene A. Smith, *Practical Data Analysis: Case Studies in Business Statistics* (Burr Ridge, IL: Irwin, 1995).

Appendixes

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