Global Executive Ph.D. Track in Industrial Engineering

http://engineering.wayne.edu/ise/get/index.php

IE 8952: Research Methods (3 Credits)
Course Syllabus - Winter 2014

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Office Hours: Before class or most days by appointment
Web Site: http://blackboard.wayne.edu

Prerequisites: Executive Ph.D. Track Candidate Status

Software: IBM SPSS STATISTICS 22 and AMOS *
*Note: please make sure that AMOS runs properly on your notebook and bring your laptops to class

Web Site: PowerPoint Slides, articles, handouts, syllabus, answers to homework, and online access to grades are available on http://blackboard.wayne.edu. Additionally, announcements will be posted on Blackboard and emailed out to the email addresses registered on Blackboard.

Program Mission: To provide the opportunity for working executives to combine real-world experience with academic skills to create a new class of technical leaders who embrace integrative thinking, are globally aware, and are capable of producing sustainable value to any organization throughout the world.

Course Objectives: There are two major goals: (a) to build competence in research design and methodology for collecting and analyzing quantitative data, and (b) to develop a foundation for formulating questions for quantitative inquiry and critically interpreting products of such inquiry.

The course is designed to introduce you to the methodology and analysis of survey research. The course considers practical considerations in the construction of questionnaires including determining questionnaire content, selection of item types and wording of items, selection of an administration method, piloting questionnaires, and locating existing questionnaires. Discussion about conducting survey research includes analyzing information obtained from questionnaires using the SPSS, specifically through the use of factor analysis, confirmatory factor analysis, and structural equation modeling using SPSS, AMOS (Analysis of Moment Structures) software. SEM is a common tool in business and social science research. In general SEM combines factor analysis and multiple regression analysis to produce models capable of simultaneously assessing the measurement properties of latent variables and their indicators and the relationships among those latent variables. Also, the presentation of topics will be conceptually rather than mathematically oriented, and many examples of the application of SEM to different kinds of actual research problems are considered.

Course Outcomes:
Upon successful completion of this course, you will be able to:

• indicate and apply the components of survey research
• demonstrate an understanding of sampling and of sampling techniques
• design and evaluate survey questions (e.g. different types of questions; decisions about question content; decisions about question wording; decisions about response format; and, question placement and sequence in your instrument).
• demonstrate and understanding of the strengths and weaknesses of electronic surveys
• demonstrate an understanding of Web Survey tools (e.g. Qualtrics, Zoomerang, Survey Monkey, Question Pro)
• develop a reliable and valid survey instrument.
• demonstrate an understanding of common methods bias
• demonstrate an understanding of how to analyze survey data using SPSS
• conduct measurement model analysis using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) and Structural Equation Modeling using AMOS software.
• demonstrate a solid understanding of moderation and mediation.
• gain facility in navigating complex SEM tasks and in understanding statistical results presented in journal articles.
• demonstrate an understanding of measurement reliability and validity concepts and assessment
• demonstrate an understanding of where to find actual survey instruments used in published research and identify sources for scales.
• demonstrate an understanding of the various biases in survey research

Grading:

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<td>Development of Preliminary Proposal &amp; Presentation</td>
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Exercises:
There will be EIGHT Exercises that cover the major steps of survey research and analysis.

Preliminary Proposal
Develop and hand in a preliminary proposal for your research project and address as many points below as you can:

1. Introduction
   
   A. Preliminary Literature Review.
   
   B. Provide a description of the research question that you plan to address.
   
   C. State the specific hypotheses that you plan to test. Include a path diagram if applicable.
   
   D. Include pertinent references from the literature that provide the theoretical background and support for your hypotheses.

2. Methods
   
   A. Describe the data that you plan to analyze to test your hypotheses.

   B. Briefly describe the data collection method. Justify the method that you selected compared to alternative methods.

   If your research question involves a Survey Development Project: as the means of collecting data, address the following:

   a. Detailed outline of content and constructs being measured and identification of specific components being assessed for each construct. Note that you can measure more than one construct in your survey. You should describe each of the constructs being measured and detail elements or components you believe define each of the constructs. It should be very clear from the detailed outline what items will be on the
survey, that is, the number of elements should approximate the number of items. It may be useful to find an existing survey that is has similar constructs.

b) A review of several articles related to the content you are measuring. The literature review should support your content description.

c) Description and rationale for the item types, response formats, administration format, and possible sources of error.

d) A listing of the questionnaire. It should be formatted as intended for administration.

e) A letter of introduction to the survey participants describing the study, their requirements, level of confidentiality, and any benefits for participation.

f) Describe your target population, sampling frame and method, how you collected the data, and how you attempted to ensure a high response rate.

g) Pilot the questionnaire with a few persons – describe what you learned from the pilot and any revisions you make.

h) Estimate the amount of time required to complete the questionnaire.

i) Administer the questionnaire, record data and conduct analyses

j) Discuss how possible sources of error are being addressed or managed.

k) Identify the inferences to be made and any related assumptions/implications. Then report and discuss the types of reliability and validity evidence that would be obtained to support use of the survey.

l) Summarize results and conclusions

m) Discuss any limitations to the questionnaire (sampling plan, response effects, etc.).

C. Briefly describe the analytic methods that you plan to use. Justify the method that you selected compared to alternative methods.

D. Describe the variables/constructs you plan to use in your analysis. Indicate how each variable will be operationally defined.

Preliminary Draft: Hand in a preliminary draft of your final report before you present your research in class.

Class Presentation: Introduce your research problem, its significance and your specific objectives. Present your research objectives and hypotheses. Highlight the published literature and interpret similarities and/or differences as they relate to your research; discuss potential problems, limitations of your study and future directions for your research.
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<td><strong>Jan. 23</strong> Thursday 5:00 to 10:00</td>
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**Article Deconstruction:** We will read a variety of articles (I will give them to you at the class prior to the discussion). Before you start reading the article you should be aware of one very important point: one does not simply *read* a scholarly article, one critically *deconstructs* it. In these exercises, critical deconstruction will involve writing a paragraph that expands upon each of the following statements.* NOTE: The words appearing in boldface italics below will be the first words in the first sentence of each critique.

1. **The main purpose of this article is** . . . [State as accurately as possible the author's purpose for writing the article.]
2. **The key question that the author is asking is** . . . [Figure out the key question in the mind of the author when he/she wrote the article]
3. **The most important information in this article is/concerns** . . . [Identify the facts, constructs, data, methods, or resources the author uses to support his/her argument.]
4. **The main conclusion[s]/inference[s] in this article is/are** . . . [Identify the key conclusions the author comes to and presents in the article]
5. **The main assumptions underlying the author's thinking are** . . . [Think about what the author is assuming to be true and what might be questioned.]
6. If we accept the author's line of reasoning, the implications are . . . [What consequence does the author's argument have on our understanding of the past and the present?]

7. If we reject the author's line of reasoning, the implications are . . . [What consequence does rejecting the author’s arguments have on our understanding of the past and the present?]

8. When writing this article, the author's point of view may have been influenced by . . .

Special Needs: If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodations in place, we will be glad to meet with you privately during office hours to discuss your special needs. Please refer to the SDS website for further information about students with disabilities and the services we provide for faculty and students: http://studentdisability.wayne.edu

Attendance: We strongly recommend that learning partners attend all classes in person. In case of travel, join the class remotely. Contact Mr. Mark Garrison at mark.garrison@wayne.edu for making arrangements for remote participation.

Honesty: Learning partners registered for this course should obey the rules of academic integrity and follow the code of conduct. Please look at the following document: http://www.doso.wayne.edu/codeofconduct.pdf.
CCBC is a large multinational with more than 80,000 employees. The company is ISO 9000 certified and as such it requires that each employee passes a periodical examination about the principles of ISO 9000. So far, once a month, the company has conducted on site preparation classes for interested employees. With escalating prices, the average direct cost per attending student has crossed the $250 threshold.

The VirtualPro offered CCBC an online training service that covers the desired ISO 9000 material at a cost of $45 per each student. The substantial direct savings, let alone the many indirect benefits to the company and employees, were obvious. Nonetheless, in spite of the enthusiasm among many employees in an informal opinion poll, the conservative HR Director of CCBC was still skeptical about the capabilities and promise of online training.

After reading about the latest advances in distance learning and considering the payoff, the HR Director agreed to offer the internet-based training to employees on a trial basis for four months and to adopt the service at the end of the term provided that VirtualPro can substantiate the value of the rendered service with empirical evidence.

Donna Hann, the Marketing Manager of VirtualPro who was assigned to CCBC, was determined to provide the required evidence. She adapted a survey from a study she found on the web and asked each trainee to fill it up at the end of the online session. After two months, Donna collected a substantial dataset but felt unsure about how the interpretation of the result. She hired you as a consultant and asked the following questions:

1. What is the quality of the data collected so far?
2. How many dimensions emerge in the data and how should I interpret them?
3. Can you provide evidence of validity and reliability of the measures?
4. Can you make the measure more efficient?
5. What can you tell about the relationships among the variables?
6. Does the survey provide evidence concerning the value of the online training?
7. What can I do to improve the survey?
8. Can you suggest an alternative research design(s) to provide evidence of the added value?
Online Training Feedback Survey

1. On a scale of 1-5, please mark 1 if you "Strongly Disagree" and up to 5 if you "Strongly Agree."
   1a. Website design appealed to me
   1b. Website was easy to navigate
   1c. Website pages loaded quickly
   1d. I was able to complete the entire lesson in one session
   1e. The course content was relevant to me
   1f. The course content helped me improve understanding of the subject

2. On a scale of 1-5, please rate the effectiveness of the following course features. Mark 1 if the feature has been "Not Effective at All" and up to 5 if it has been "Extremely Effective."
   2a. Practical case scenarios
   2b. Questions and answers with feedback
   2c. "Drag and drop" interactively
   2d. Clicking/Rolling the mouse or an icon or a picture
   2e. Plain text format

3. Please rate the course as follows:
   3a. On a scale of 1-5, please rate the difficulty level of the course. Mark 1 if the course was "Too difficult" and up to 5 if it has been "Too Easy."
   3b. On a scale of 1-5, please rate the level of details in the course. Mark 1 if the details level was "Absolutely Insufficient" and up to 5 if it has been "Too Excessive."

4. Please rate your preference of online training as follows:
   4a. On a scale of 1-5, please rate your preference of online courses over traditional classroom instruction. Mark 1 if you "Strongly Prefer Traditional Classroom Course" and up to 5 if you "Strongly Prefer Online Course."
   4b. On a scale of 1-5, please rate the overall effectiveness of online training as employees training method. Mark 1 if online training is "Not Effective at All" and up to 5 if it is "Extremely Effective."

5. On a scale of 1-5, please mark 1 if you "Strongly Disagree" and up to 5 if you "Strongly Agree."
   5a. I am an expert user of computers
   5b. I have much experience in using computers for research or educational purposes
   5c. I use computers very often
   5d. I have high comfort level in using computers
   5e. I'm very motivated to learn new topics
   5f. I have preference for active participation in learning
   5g. I am able to learn alone

6. On a scale of 1-5, please mark 1 if you "Strongly Disagree" and up to 5 if you "Strongly Agree."
   6a. I am very satisfied with the ISO 9000 online course
   6b. If courses that I need for professional development are offered online, I will definitely take them.
Exercise 1 – Article Deconstruction

Read and enjoy Capron & Mitchell 2008 (posted on Course Blackboard Site) then briefly respond to the following:

1. What is their home discourse (in what stream of research are they positioning themselves)?

2. What is their theoretical contribution to this discourse?

3. Measurement: How do they establish content validity, reliability, and convergent and discriminant validity?

4. What is the causal inference? What is the evidence? Is the evidence adequate? How do you know? Are there any problems like alternative explanations that they do not control for or fundamental problems with their logic?

5. Discuss the sampling – is it adequate for this causal inference? To what population are the findings generalizable?

6. Is this research actionable? Why or why not?
Exercise 2 – Exploratory Factor Analysis

The underlying working assumption of Del was that a measure of performance should include both a measure of productivity and a measure of quality. It was assumed in Soho that at a given level of effort, an increase in quality of service would come at the expense of productivity, and vice versa.

While productivity focuses on meeting quantitative and measurable targets of the service workers, quality is concerned with softer facets of their work that are more difficult to express in quantitative terms. In addition, Del noted that the research company had identified 2 subdimensions of productivity, and 4 subdimensions of quality. The measurement of performance appeared to be complex.

Although conceptual distinction between productivity and quality and their subdimensions made sense, Del was not sure whether the service workers at Soho maintained such fine distinctions. He wondered whether the performance distinctions were consistent with service workers’ actual mental models, and whether they treat productivity and quality as two distinct concepts.

Using factor analysis and the corresponding data from the Soho Outfitters case, you are asked to help address Del’s concern for conceptual-empirical consistency. Be sure to develop and implement a research plan that addresses the following questions:

1. Is the data suitable for factor analysis?
2. How many factors should be extracted for Productivity? How many for Quality? Conduct a separate analysis for productivity and quality.
3. For each DV, interpret and label the resulted factors from the separate analysis. What criteria did you use for deleting items? How did you balance the needs for conceptual depth and statistical soundness?
4. Now combine the productivity and quality items for a joint analysis. What can you say about the productivity-quality distinction?
5. Estimate the reliability of the performance measures
6. Assess the convergent validity and discriminant validity of the performance measure
7. How can these factors be used for further analysis? What kind of dependent variables should be used by Del?
Exercise 3 – Model Building

The purpose of this exercise is to work on building a structural model that is empirically testable, or more precisely, falsifiable. The exercise consists of two parts: (1) Analyze three published articles; and (2) Develop an initial structural model to guide your own QNT project based on your research thus far. See the “Modeling Complex Mechanisms Teaching Notes” at the end of the syllabus and Van de Ven’s Engaged Scholarship for assistance.

1. Analyze Published Models (Posted on Course Blackboard Site)
   - Piccolo & Colquitt (2006)
   - McEvily & Marcus (2005)

For any one (your choice) of the three papers, answer the following questions:

1. Variables
   a. What is/are the independent variable(s) of interest?
   b. What is/are the dependent variable(s) of interest?

2. Mediation
   a. If there is mediation proposed, what is/are the mediating variable(s)?
   b. What is the logic for the mediation between independent and dependent variables?

3. Moderation
   a. If there are moderating variables proposed, what is/are the moderating variable(s)?
   b. What is the logic of moderation of the relationship between independent and dependent variables?

4. Theory
   a. Describe, in your own words, the theory of the paper and its findings.
   b. Who’s theory is this paper looking to extend?
      i. Is this paper “actionable” for practice? How so?

5. Look at the items (questions) they used to measure things.
   a. Where did they get these items?
   b. Do all of the items make sense?

6. From your experience in the world, did the paper ignore or omit any important factors or explanations?
The board of the Rencare Company recognized the critical role of the insurance agents in providing customer value, maintaining a high level of trust in the company, and win overall long term loyalty of their customers. At the same time, the top management hoped that the customers are able to distinguish between the agent and the company so that in cases where agent practices are indeed problematic, the customers do not hesitate to contact the company and seek redress.

Following a debate about the topic in the boardroom, Rencare hired the TruLoyaltyCo (TLC) Research firm for conducting a study that would examine the related consumer perceptions.

Using CFA (AMOS), please answer the following questions based on the data collected in response to the client survey.

1. Do consumers distinguish between trust in the management and trust in the insurance agents?
2. Do consumers find that managements’ practices and insurance agents’ practices affect one another?
3. Do consumers have a clear perception about the value of insurance products?
4. What kinds of loyalty do consumers exhibit toward the company?
5. How efficient are the measurement instruments? Can you fine tune the scales further?
6. What can you say about the relationships among the variables?
Del would like you to help out with analyses on data he had collected from another organization he has been doing some consulting work for, RENCARE. His clients at RENCARE are curious about the effects of consumer trust ($atrust$ and $ctrust$) on consumer loyalty toward repeat business ($loyrep$). They believe that the effects of the two trust components are moderated by both education ($educ$) and economic cost/benefit considerations ($value$). You can use the dummy variable approach to test the moderation effect of $educ$ (hint: create a college dummy; $d_{educ}=0$ if $educ=1$ or $2$; $d_{educ}=1$ if $educ=3$ or $4$). Next, on a separate analysis, you can test the moderation effect of $value$ by creating interaction terms of $value$ with $atrust$ and with $ctrust$ (hint: use standardized scores for creating interaction terms and for the rest of the model as well). The two separate moderation models are depicted below.

Be sure to include the following steps in your analysis:

a. Produce and interpret the moderation effect(s) of $educ$.

b. Provide and interpret the moderation effect(s) of $value$. 

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**Model 1 (education moderation):**

- $atrust$
- $ctrust$
- $educ$
- $loyrep$

**Model 2 (value moderation):**

- $atrust$
- $ctrust$
- $value$
- $loyrep$
Exercise 6 – AMOS and Mediation Analysis

Del is extremely happy with your work. Based on the previous results, another question has emerged in his mind, particularly pertaining to the role of economic considerations (value). He would like you to help him conduct a mediation test, to see if value mediates the effects of trust components (atrust and ctrust) on loyalty. However, it is important that you use the measure for overall loyalty (loyalty) instead of loyrep, since the former is more comprehensive and is therefore better for the mediation test. Also, specify educ and age as control variables on the dependent variable (not the mediator). Use AMOS 5.0 for the analysis. The proposed model is shown below.

Be sure to include the following steps in your analysis:

a. In AMOS, discuss the goodness of fit statistic, the fit indices, residuals, modification indices, covariance estimates and parameter estimates. Make good tables where necessary.

b. Provide an interpretation of the mediation dynamics, particularly the strength of the mediation and direct effects. Also, make recommendations to RENCARE for a sound sales approach.
Del appreciates your help and would like you to help him out one last time with the analysis of trust and loyalty. This time he would like to explore a more complex model for RENCARE, one that differentiates between different types of economic value (\textit{vallong} and \textit{valshort}) and consumer loyalty (\textit{loyrep} and \textit{loylong}). The model also allows for the moderation of value on loyalty components by \textit{age}. In other words, he needs help with a model that includes both mediation and moderation effects, as well as multiple dependent variables. He would like you to use \textit{income} (hint: use as a raw variable, no need to create a dummy as before) and \textit{education} (\textit{educ}) as control variables. The proposed model is depicted below (except for the controls).

Be sure to include the following steps in your analysis:

a. In AMOS, discuss the goodness of fit statistic, the fit indices, residuals, modification indices, covariance estimates and parameter (regression) estimates. Make good tables where necessary.

b. Provide an interpretation of the mediation dynamics, particularly the strength of the mediation effects, direct effects, and moderation effects. Also, make recommendations to RENCARE for a sound sales approach.
Exercise 8– The Whole Enchilada

1. For this assignment you are going to use the Soho dataset to come up with a model that includes the following:
   a. At least 3 IVs
   b. At least 2 DVs
   c. At least 1 mediator
   d. At least 1 multigroup moderator
   e. At least 1 interaction
   f. At least 3 controls
2. Please provide hypotheses
3. Please report and interpret all findings
4. Do not forget model fit
5. Validate all claims (significance of mediation, significance and location of multigroup moderation)

If you can handle this, then you are sitting pretty. You have almost become a statistics Jedi.
Introduction
Del Kundan sat contemplating the second resignation letter he had received during the past week. Resignations were to be expected in Del’s business, but the two resignations this week were from long time employees who were excellent customer service representatives. If these two individuals felt that things were getting so bad that they had to leave, then Del wondered what the other, less experienced employees might be thinking. Whatever was going on, Del had to get to the root cause of the issue quickly. The busy Christmas season was just around the corner. He could not afford unforeseen problems—not this time of the year.

Background
Not long ago, Del Kundan became the Vice-President of customer service for Soho Outfitters, a national retailer of specialty clothing and sporting goods. Soho Outfitters had started as a small surf shop during the 1950s catering to the needs of local surfers in the San Diego coastal area. Soho had prided itself on its ability to keep up with the equipment and clothing needs of its fast paced clientele. During its first twenty years of existence, Soho Outfitters had gone from a single store doing less than $100,000 in business to a network of stores in Southern California with retail sales of over $10,000,000. In 1975 when Hana Marcos, the founder of Soho Outfitters, looked back on his first twenty years of operation he could justifiably be proud of the growth and reputation of his business. Soho Outfitters’ success attracted the interest of several large national retailers. These retailers were looking for ways to diversify out of their traditional downtown department stores and reach the growing market of “baby boomers.” Specialty retailers like Soho Outfitters were especially attractive because of their young clientele that normally did not shop at the department stores. Until 1975, Sal hadn’t given a second thought to any offer to buy him out. However, after twenty years in the business Sal was looking to slow down and enjoy the fruits of his labor.

The Jostin Company, a Cleveland, Ohio based retail giant offered Hana $28,000,000 for Soho Outfitters. Hana felt that he might get more if he held out for other bids, but Jostin was a “class” organization and Hana felt that it would continue the high quality and service image that had come to characterize Soho Outfitters. Hana signed the final papers for the sale on September 19th and Soho Outfitters went from a locally managed operation to a corporate-controlled subsidiary of the Jostin Company.
The Jostin Company management had bought Soho Outfitters because of its focus on a specific market niche. The youth oriented, Southern California image of Soho could be leveraged by Jostin to sell a much expanded line of clothing and accessories. To capitalize on what Jostin felt was the burgeoning market for youth oriented clothing, Jostin established a national catalog sales operation in 1978 to capitalize on the brand equity of Soho Outfitters.

The catalog sales of Soho Outfitters did not immediately create a sensation at Jostin headquarters. Numerous problems with merchandising, stocking, logistics management, sales order management and sales operations created a customer service nightmare. Jostin went through several management teams and numerous organizational alignments before hiring Juan Nistandra to oversee the troubled catalog division. In the restaurant business where Juan made his mark, he was known as “magic john” because of his success in running an operation that was not only highly efficient but also excelled in providing a delightfully memorable customer experience. Juan’s magic touch consistently produced highly profitable returns in an industry that was known for unpredictability and stiff competition. Once Juan arrived at Soho, he set about to duplicate his success. Juan cleaned up the back office operations, established a professional merchandising staff, built a world-class distribution center, and created a formal customer service organization to handle customer inquiries and issues. From 1982 when Juan was first hired through the end of 1997, Soho Outfitters’ sales grew from $12,000,000 to $75,000,000 annually.

In an interview to Forbes in 1995, Juan had described the keys to the phenomenal success of Soho Outfitters. Juan stated that Soho’s youth oriented clothing and accessories, its Southern California lifestyle theme, and its almost fanatical focus on customer service were the key contributors to its growth. Juan also pointed out that the principal problem facing his competitors was not that they couldn’t imitate his youth oriented product line. Nor was it in developing an effective theme to capture a niche. Rather, it was the strong customer focus of his Soho Outfitters’ customer service staff that would be difficult to duplicate without enormous investments. Privately, Juan recognized that operations like Soho would make or break their future depending on their ability to enhance the productivity of their operations and provide a high level of service quality to ensure customer loyalty. The magic, of course, lay in the optimal balance between these two, often conflicting, forces of productivity and quality.

Summer 1998

The summer of 1998 would go down in Soho Outfitters’ history as the year that was “hung in the balance.” Concerned about failure to maintain productivity gains in catalog operations, Juan was eager to implement an enterprise resource planning system that was to have been completed in the Spring but was delayed because the needed computer systems failed to arrive on schedule. Trying to change the routine of any finely tuned operation is problematic enough. Doing so in the midst of the busy summer months made it only worse. Del tried to get the implementation of the new ERP system delayed for the Fall, but executive and information technology management felt that the changes needed to be made without delay. Juan understood Del’s concern but favored implementation at the earliest as well because of fears of reduced profitability due to low productivity of service workers. Besides, Jostin had spent in
excess of $5,000,000 on management consulting to ensure that every one would be ready for the new system.

System implementation began in late June and problems started to surface immediately. The new system worked differently from the existing system and customer inquiries could not be handled as rapidly as before. In addition, customer histories had not been completely transferred into the new system’s database. As a result, long time customers had to be asked to resupply information about themselves, something that they had not had to do in a long while.

However, a key difference in the new ERP system was that it automatically and unobtrusively recorded over one hundred indicators of service worker’s productivity. Many of the measures were based on time-and-motion studies (e.g., number of keystrokes used, number of sub-menus downloaded) and response times (e.g., time to complete transaction, time between calls). In addition, using sophisticated speech recognition technology, the ERP system was able to code the verbal communication between the service worker and customer, and textually analyze such data for the frequency and regularity of “customer-friendly” words and the “warmth” of the tone. Together these measures were used to tabulate a productivity and quality index for each customer service worker that was supplemented by customer satisfaction surveys. To further the “open and learn” environment at Soho, Juan had insisted that the new ERP system be equally accessible by all service workers so that they could examine their own performance indicators as well as of their colleagues. Juan felt that this openness would foster a climate of learning and helping. These indices were used directly in the newly revamped compensation and incentive scheme. A single standard deviation change in one of these indices could result in a 25% change in the total compensation of a service worker.

Because of the numerous problems that arose during the system’s implementation, significant pressure had been placed on Soho’s customer service organization. Between irate customer calls, normal customer requests, and management requests for information, the customer service personnel had been stretched to their limit. A number of new hires had to be added to handle the increased workload that resulted from the system transition and these new hires further taxed the existing employees since most job training occurred on the job. All in all it had not been an easy summer for anyone.

Despite the problems presented by the new system, Del’s organization had managed to book $30,000,000 in sales during the summer. This figure was a record for the period and showed an increase of 5% over the last year. Juan was especially happy with the performance since this was achieved in the face of significant technological problems and the loss of at least two very significant accounts that left for another supplier. Juan momentarily dwelled on the possible reasons for the loss of these significant accounts, but with the record sales could not find the motivation to pursue it further.

The Customer Service Nexus
Soho Outfitters’ customer service organization was the linchpin of its success. Soho’s customer service personnel received outstanding ratings from customers for their professionalism, knowledge, enthusiasm, and commitment.
for going the extra mile. As Juan Nistandra, the President of Soho Outfitters had stated on numerous occasions, Soho’s success was the result of a highly dedicated group of employees who refused to make any compromises when it came to customer service.

Soho Outfitters provided its customer service employees with a significant number of perks. Customer service representatives worked in a campus like setting using state of the art equipment and, even given the problems with the recent implementation of the ERP system, representatives were given daily breaks to walk around, collect their thoughts and relax away from the pressure of being on the spot to handle customer problems. A cafeteria with free soft drinks and coffee was also provided so that workers could get refreshments when they went on break. A competitive pay and benefits package was also provided to each qualifying employee.

Despite the amenities provided to the customer service employees, the customer service job was not easy. A typical customer service representative spent six hours per day handling customer requests, complaints, or issues. In addition, their workday was highly structured with strict enforcement of the frequency, length and number of breaks. In addition, breaks could be curtailed when unexpected “peaks” of incoming calls occurred. Sometimes the customers could be rude and discourteous. Customer service representatives, however, could not let a customer’s demeanor affect their handling of a situation. They were expected to be courteous at all times. Any customer complaint about the way an issue was handled required management involvement and could result in the dismissal of the responsible customer service representative if the representative had not followed the practices set down by management. Service roles in call centers required cool heads that can balance between highly demanding (sometimes irate) customers and following company laid rules and procedures.

Given the characteristics of the job it was not uncommon to for the organization to experience high turnover in new hires, sometimes in excess of 50%. The pressure of always “being on” could burn out someone not experienced with the world of customer service. However, once a trainee had been on the job for over a year, turnover rates declined substantially to less than 10%. It was this core of seasoned veterans that allowed Soho Outfitters to consistently exceed customer expectations and generate year after year of record sales.

Del wondered where he should begin and what issues he should look at. After careful reflection, he realized that one of the key concerns he had had to do with the consequences of the new ERP system. After all, he had some reservations regarding the implementation of this system in the Summer of 1998 and he had disagreed with Juan about the timing and the speed with which the new system was brought in. Several problems had occurred after the implementation of the system. Customer complaints about resupplying data, inefficiencies in handling new customer inquiries, significant levels of burnout among customer service representatives, high turnover rates in new hires, and eventually, and most importantly, the loss of two major accounts and two unexpected resignations.

Only if he had some data. Data to explore what was going on, and where to focus his energy. It wouldn’t be bad to run SPSS again. He was getting rusty. “The new system itself could not be
the problem, after all it was just a system,” Del thought, “perhaps the problem was how the
system affected people and the way they performed their tasks.” Did the loss of two major
accounts and the two resignations have something in common? Did they reflect something
bigger? Problems with clients and customer service representatives seemed to have started at
the same time. Were client losses and intentions to resign significant patterns across the
representatives? Could they become more widespread? He badly needed some data to get
started.

Then it struck him. The ERP system had an in built biyearly employee tracking survey for which
the initial benchmarking phase was completed recently. No one had bothered to analyze the
data yet. He recalled approving a detailed questionnaire. Del wondered if he could gain some
insights by conducting some exploratory analyses. Although the responses were self-report and
perhaps biased, they did include questions about service representatives’ perceptions of
satisfaction and burnout levels in their interactions with the customers, the quality and
productivity of their work, and a range of potential role stressors. In fact, Soho’s bill collection
representatives were also surveyed at the same time to provide comparative data. All he had
to do was to locate the questionnaire, download the data and relearn the SPSS. He knew that
the first of these three jobs was going to be the hardest.
SECTION VI

In this section we are interested in the performance quality you provide in customer interactions. When comparing yourself to an average employee, how do you rate yourself in terms of your quality of customer interactions? Please use the following categories.

<table>
<thead>
<tr>
<th></th>
<th>Bottom 20%</th>
<th>Lower 30%</th>
<th>Middle 50%</th>
<th>Upper 30%</th>
<th>Upper 20%</th>
<th>Top 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>1. Consistently resolving customer concerns the first time.</td>
<td>0 0 0 0 0 0</td>
<td></td>
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<tr>
<td>Q2</td>
<td>2. Providing accurate or correct information to the customer.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q3</td>
<td>3. Even though it is not your responsibility, making sure other departments follow through with your customer requests.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q4</td>
<td>7. Telling the customer the straight facts instead of telling them what they want to hear.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q5</td>
<td>5. Overall, performing your job dependably and accurately.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q6</td>
<td>8. Taking the time to help your customers at the expense of not meeting daily productivity goals.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q7</td>
<td>9. Taking the initiative to help your customers even when it is not part of your responsibility.</td>
<td>0 0 0 0 0 0</td>
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<td>Q8</td>
<td>10. Overall, developing customer trust and confidence in your service.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q9</td>
<td>11. Responding promptly to customer requests, despite your busy workload.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q10</td>
<td>12. Returning telephone calls promptly.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q11</td>
<td>13. Consistently following up on promises made to your customers.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q12</td>
<td>14. Following-up after the phone call.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q13</td>
<td>15. Overall, consistently providing prompt service to all of your customers.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q14</td>
<td>17. Servicing the account with the customer's best interest in mind.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q15</td>
<td>18. Listening attentively to identify and understand the concerns of customers.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q16</td>
<td>19. Working out solutions to each customer's questions or concerns.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q17</td>
<td>20. Overall, providing individualized attention to each customer's concerns.</td>
<td>0 0 0 0 0 0</td>
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</tbody>
</table>

Relative to employees in similar situations, how do you rate yourself in terms of your productivity or performance on each of the following items.

<table>
<thead>
<tr>
<th></th>
<th>Bottom 20%</th>
<th>Lower 30%</th>
<th>Middle 50%</th>
<th>Upper 30%</th>
<th>Upper 20%</th>
<th>Top 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q18</td>
<td>1. Overall customer contact time (e.g., S.L.T.)</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q19</td>
<td>2. Meeting your quotas and targets.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q20</td>
<td>3. Overall performance in reaching objectives.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q21</td>
<td>4. Following the company's suggested telephone call monitor process.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q22</td>
<td>5. Providing accurate and complete paperwork.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q23</td>
<td>6. Overall knowledge of company policies and procedures.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Q24</td>
<td>7. Keeping abreast of your company's policies.</td>
<td>0 0 0 0 0 0</td>
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<tr>
<td>Variable Name</td>
<td>Description</td>
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<tr>
<td><strong>Job Performance...</strong></td>
<td>17 items measuring the quality of service on 7-point scale 1=bottom 20%, 7=top 5%. Q1 to Q5 measure Reliability, Q6 to Q8 measure Trust, Q9 to Q13 measure Promptness and Q14 to Q17 measure Individualized attention.</td>
<td></td>
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<tr>
<td><strong>Productivity...</strong></td>
<td>7 items measuring productivity of service on a 7 point scale 1=bottom 20%, 7=top 5%. P1 to P4 measures Output, P5 to P7 measures Backroom productivity.</td>
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<tr>
<td><strong>Job Satisfaction...</strong></td>
<td>3 items measuring satisfaction with work itself 5 point scale; 1=extremely dissatisfied, 5=extremely satisfied.</td>
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<tr>
<td><strong>Burnout Tendencies...</strong></td>
<td>6 items measuring burnout tendencies resulting from interacting with customers; 6 point scale; 1=very much unlike me, 6=very much like me.</td>
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<tr>
<td><strong>Individual Orientation...</strong></td>
<td>3 items measuring disposition toward learning from challenging tasks 5 point scale; 1=never do this, 5=always do this.</td>
<td></td>
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<tr>
<td><strong>Stress Factors...</strong></td>
<td>4 items measuring the frequency of resource-demand gap. 5 point scale; 1=never, 5=always.</td>
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<td></td>
<td>2 items measuring the frequency of role ambiguity 5 point scale; 1=never, 5=always.</td>
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<td></td>
<td>3 items measuring the frequency of role conflict 5 point scale; 1=never, 5=always.</td>
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<td></td>
<td>2 items measuring the frequency of work-family conflict 5 point scale; 1=never, 5=always.</td>
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<td></td>
<td>4 items measuring the frequency of customer rejections. 5 point scale; 1=never, 5=always.</td>
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</tbody>
</table>
Ethical Concerns   5 items measuring the frequency of ethical concerns.
(EC1 to EC5)   5 point scale; 1=never, 5=always.
Mgmt Unfairness   2 items measuring the frequency of top management unfairness.
(MU1 to MU2)   5 point scale; 1=never, 5=always.
Lack of Control   4 items measuring the frequency of lack of task control.
(LC1 to LC4)   5 point scale; 1=never, 5=always.
Dead End Job   2 items measuring the frequency of lack of opportunities.
(DE1 to DE2)   5 point scale; 1=never, 5=always.
Unsupportive Coworkers   3 items measuring frequency of unsupportive coworkers.
(U1C1 to UC3)   5 point scale; 1=never, 5=always.
Unsupportive Boss   4 items measuring the frequency of unsupportive boss.
(UB1 to UB4)   5 point scale; 1=never, 5=always.
Apathy   3 items measuring disposition of apathy toward stressful tasks;
(AP1 to AP3)   5 point scale; 1=never do this, 5=always do this.

Job Characteristics...
Feedback   4 item measuring the amount of feedback obtained at work
(F1 to F4)   5 point scale; 1=strongly disagree, 5=strongly agree.
Participation   4 items measuring the frequency of participation in various decisions;
(PP1 to PP4)   5 point scale; 1=strongly disagree, 5=strongly agree.
Autonomy   3 items measuring the amount of freedom and independence at work;
(A1 to A3)   5 point scale; 1=strongly disagree, 5=strongly agree.

Individual Characteristics...
Age   In years
Gender   1=male; 2=female.
Marital Status   1=married, 2=divorced, 3=widowed, 4=single, 5=living together
People in Household   Numerical value
Years in current job   Numerical value in years
Customer Interaction   Number of customers handled per day
Years in current firm   Numerical value in years
Education   1=high school, 2=1-3 years of college...5=masters
Income   1=<$9999, 2=$10,000--$19,999...6=>$50,000
Category   0 = Customer Service (CSR); 1 = Bill Collectors (BCR)

“RENCARE”

Code sheet for RENCARE data set

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td></td>
<td>four digit respondent identification</td>
</tr>
<tr>
<td>atrust</td>
<td>interval</td>
<td>a summary score for consumer’s trust in the agent</td>
</tr>
<tr>
<td>ctrust</td>
<td>interval</td>
<td>a summary score for consumer’s trust in the company policies and practices</td>
</tr>
<tr>
<td>valshort</td>
<td>interval</td>
<td>a summary score for consumer’s evaluations about the short term benefits and costs for continue to be the insurance company’s customer</td>
</tr>
<tr>
<td>vallong</td>
<td>interval</td>
<td>a summary score for consumer’s evaluations about the long term benefits and costs for continue to be the insurance company’s customer</td>
</tr>
</tbody>
</table>

Code sheet for BENCARE data set

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</tr>
</tbody>
</table>
term benefits and costs for continue to be the insurance company’s customer

**value**
- **interval**
  - overall value score (mean of valshort and vallong)

**loyrep**
- **interval**
  - a summary score for consumer’s behavioral loyalty toward the insurance company for repeat business

**loylong**
- **interval**
  - a summary score for consumer’s behavioral loyalty toward the insurance company for a long term relationship

**loyalty**
- **interval**
  - overall loyalty score (mean of loyrep and loylong)

**age**
- **Scale**
  - Age of the respondent; 1 = 18-24 yrs; 2 = 25-34 yrs; 3 = 35-44 yrs; 4 = 45-54 yrs; 5 = 55+ yrs

**sex**
- **Nominal**
  - Gender of the respondent; 1=Male; 2=Female

**educ**
- **Scale**
  - Highest level of education completed by the respondent; 1 = High School; 2 = Some College; 3 = College Degree; 4 = Graduate School.

**income**
- **Ordinal**
  - Total annual household income of the respondent
    - 1= less than 35,000; 2=35,000-44,999; 3=45,000-54,999; 4=55,000-64,999; 5=65,000-74,999; 6=75,000-84,999; 7=85,000-94,999; 8=95,000-104,999; 9 = 105,000-114,999; 10 = 115,000-124,999; 11 = 125,000-134,999; 12 = 135,000 or more

**val1 to val3**
- **internal**
  - 3 Likert scale items measuring economic value obtained

**loy1 to loy8**
- **interval**
  - 8 Likert scale items measuring sense of loyalty to company

**rep17 to rep20**
- **Interval**
  - 1-10 semantic differential scale for measuring consumers’ trust in the representative

**prac17 to prac20**
- **Interval**
  - 1-10 semantic differential scale for measuring consumers’ trust in the company’s policies and practices