SOME ARGUMENTS FOR INTEGRATION OF QUALITATIVE METHODS INTO BUSINESS STATISTICS COURSES

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The processes which facilitate informed decision-making in business contexts have been gaining in importance in many areas such as business, healthcare, education and government. Consequently, quantitative methods which form the basis of curricula for typical courses on business statistics are finding recognition in the wider business community. In contrast, qualitative methods, although used by management researchers and applied statisticians alike to solve specific research problems, suffer the unjustified exclusion. This paper outlines some of the core assumptions of qualitative research methods and provides three examples illustrating selected types of qualitative methods that are useful in the business context. We argue for the introduction of a balanced mixed method approach early in the process of studying business statistics, as a preferred basis for developing business students' ability to respond to diverse types of real-life managerial challenges.

INTRODUCTION

What is the function of a business statistics course, and what educational goals is it serving? At the introductory or undergraduate level, such a course typically covers topics such as descriptive statistics, probability, binomial, normal, and other distributions, correlation and linear regression, tests of hypotheses and confidence intervals, and the like. Thus, superficially, there is nothing much that sets such a course apart from introductory statistics courses in other disciplines. However, going beyond what is usually taught in a business statistics *course*, the broader role of statistics in the business or managerial world is to use data to support informed decision-making in the face of uncertainty. "Data" in business contexts can be collected as a by-product of ongoing organizational processes, or can emerge from specialized efforts such as when conducting customer surveys. Whatever its source, clearly data is not necessarily limited to *quantitative* only.

Given the above broad goals for a business statistics course in mind, we believe it is important to examine the role of *qualitative* data and related research methods in business statistics courses, and the extent to which such courses should also address qualitative data analysis. Indeed, statistics education researchers have been using qualitative methods for some time now, as evident in many papers appearing in SERJ or similar journals and research forums (e.g., Ben-Zvi, 2003). From a research perspective, qualitative methods are a very useful approach, or sometimes even the only approach, to collect and analyze data needed to address specific statistics education-related problems.

However, qualitative approaches seldom find their way into business statistics *classrooms* (or for that matter, arguably into any statistics course). We believe statistics educators need to consider broadening the business statistics curricula with issues pertaining to qualitative research, as certain types of *applied* research problems and new challenges, faced by managers and business communities, require the use of a mixed method approach.

Below we first briefly outline some of the core assumptions of qualitative research methods. We then provide three detailed examples illustrating selected types of qualitative methods that are useful in business contexts. The discussion that closes the paper reiterates the need to link, and at times integrate, quantitative and qualitative research approaches in educational practice with the goal of adequately supporting real-life informed decision-making processes.

QUALITATIVE RESEARCH METHODS IN THEORY AND (BUSINESS) PRACTICE

The use of qualitative methods and techniques in general builds on the core assumption that there are important phenomena or processes of a social or behavioral nature that cannot be measured quantitatively. Researchers adopt qualitative methods in an attempt to understand complex phenomena by getting to know the behaviors or cognitions of persons, teams, or social groups involved, as well as their values, rituals, symbols, beliefs, and emotions (Frankfort-

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Nachmias & Nachmias, 2000). This can be done via collection and analysis of data from four key channels: talk/speech, documents/texts, observations, and visual objects such as photographs, drawings or video. As with all research, the data are used to derive conclusions or conjectures that respond to certain research questions.

Similar to the literature on quantitative research, the literature on qualitative research (e.g., Strauss & Corbin, 1998; Klein & Myers, 1999) emphasizes that researchers should use various processes to establish or improve the reliability and validity of analyses, interpretations, and conclusions based on the information collected through qualitative channels. For instance, whenever possible and justified by the research question, two or more separate coders should conduct systematic content analysis, and inter-rater agreement can be measured and reported. Various triangulation techniques, based in general on collecting and comparing data from different sources or methods, may also be used to increase the breadth of the available data and improve the soundness of the emerging conclusions (Leech & Onwuegbuzie, 2008).

Following are three examples to illustrate how a specific "need to know" leads to the application of selected qualitative techniques for data collection and analysis, and how conclusions which form the basis for business decision-making processes then go beyond what would have been possible through the use only of quantitative techniques.

Example 1: Ethnographies

Ethnographic methods that may combine interviews, observations, videos, and so forth, aree commonly used in order to characterize how workers use their skills in applied contexts or cope with specific situations, or as part of usability studies that examine how users interact with websites during e-commerce or other Internet-based transactions (Hornbaek, 2006). One of many examples is the work by Noss et al. (1999), who studied how nurses use knowledge of "average" in their work. They showed that mathematical and statistical meanings of average are not mathematical abstractions, but are integrated with contextual meanings within the particular purposes for which averages are used by nurses, such as when monitoring the blood pressure of critically ill patients. This research example implies that understanding of workers' behavior, of the meanings they apply to concepts or tools they have acquired during training, which in turn impact or their ability to effectively cope with critical situations, cannot be done by using quantitative techniques. If problems with workers' performance were being discovered (e.g., nurses calculating incorrect doses, patients getting sick), managers would be hard pressed to collect data about the causes of the problems if they would have only learned to collect and analyze data quantitative means.

Example 2: Focus groups and in-depth interviews

Among all qualitative research methods, group interviews and one-to-one interviews may be the most familiar and most acceptable to 'orthodox' statisticians. One of the most well known examples of the use of such techniques is found in the research program of Zeithaml, Berry, and Parasuraman (e.g., Zeithaml et al., 1990), aimed at understanding how consumers and managers perceive the key attributes of service quality, and what discrepancies might exist between the perceptions of consumers and of service marketers/managers that may cause service quality shortfalls. Towards that end they started in 1983 an exploratory phase involving in-depth interviews with executives as well as 12 focus groups, led by trained facilitators, with customers drawn from four different service segments: retail banking, credit card institutes, securities brokerages, and product repair and maintenance. The sampling process intended to ensure that the conceptual insights would be applicable to a broad cross-section of industries.

Findings from the focus groups and executive interviews provided Zeithaml et al. (1990) with the empirical foundation for creating the now-famous SERVQUAL model, which views service quality as the gap between perceived and expected service attributes. Initially, content analyses of focus group discussions led to identification of ten facets of service quality as perceived by customers: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding the customer, and tangibles. Further work that combined factor-analytic studies and qualitative refinements enabled Zeithaml and her colleagues to reduce the ten themes to five key ones: tangibles, reliability, responsiveness, assurance, and empathy. These five

themes led to a creation of the well known SERVQUAL questionnaire (Zeithaml et al., 1990; Parasuraman et al., 1991) that uses Likert-type scales. The SERVQUAL model and questionnaire continue to serve as the basis for many initiatives to measure customer satisfaction (Ladhari, 2008), and to-date have been used worldwide in thousands of academic and business studies on customer perceptions and expectations of services with the goal of continuous improvement of service processes.

Example 3: Critical Incident Technique

The Critical Incident Technique or CIT (Gremler, 2004) uses stories about "critical incidents" as data. The CIT technique has been at the core of Bitner et al.'s (1990) research on customer views of the nature of service failures, as distinguished from the service providers' point of view on what constitutes service failures. They collected 700 incidents for very good or very bad service encounters from customers of airlines, hotels, and restaurants.

The primary results of CIT studies are the themes and categories that emerge through a process of content analysis and classification. Themes emerging from analysis of critical incidents can be quantified when the sample size (of incidents) is sufficiently large, allowing for analysis of frequencies of identified themes as well as of associations with background variables is possible, lending further potential to qualitative studies. Accordingly, Bitner et al. (1990) categorized the collected incidents to isolate the particular events and related behaviors of contact employees that cause customers to experience service encounters as highly satisfactory or dissatisfactory. Their analysis identified three key groups of perceived service failures (employees' response to service delivery problems, employees' response to customer needs and requests, and unprompted and unsolicited employee actions). A total of 12 specific and detailed subthemes that sketch a wide terrain of possible service problems was developed and constitutes the heart of the findings. Bitner et al. (1990) pointed to possible uses of the resulting classifications both in further research and in managerial practice, such as in developing customer satisfaction monitoring programs, designing and improving service procedures and policies, and training contact personnel to reduce service failures.

A recent example for the combination of qualitative and quantitative methods can be found in work of Luria et al. (2009). These researchers aimed to examine factors affecting employees' willingness to report to management on customers' service complaints. Employees' inclination to share information with management on service problems, or refrain from doing so, can impact an organization's ability to provide quality service, as well as impact the metrics (statistics) available to management regarding customer dissatisfaction. These researchers performed three related studies. Two qualitative studies employed a critical incident technique and interviews with service workers, and revealed that workers practice much discretion in their decision to report both informal and formal complaints, weighing cost/benefit considerations, customer motivation and complaint justification, and numerous organizational factors. Based on these studies, a subsequent quantitative study developed a Likert-based scale of employees' willingness to report on service complaints and showed that it is associated with measures of service climate and empowerment. While the quantitative data helped Luria et al. (2009) to describe behavioral patterns, it is the qualitative studies which enabled broader and deeper understanding of what underlies employee behavior, and pointed to needed managerial interventions.

DISCUSSION AND IMPLICATIONS

The three examples of practical qualitative methods application aim to support our key message: there is a need to link, and at times integrate, quantitative and qualitative research approaches in organizational practice. Thus, data and conclusions emerging from the application of a mixed-molde approach should be recognized as a preferred means to adequately support real-life informed decision-making processes by management. The clearest illustration comes from Example 2 above, regarding the development of the SERVQUAL conceptual model and associated instruments. It is thus not surprising that it is now customary to combine qualitative and quantitative methods every time an organization wants to adapt the general SERVQUAL model to its own cultural or operational context (Ladhari, 2008).

Beyond the possible uses of qualitative methods to understand business-related problems, it is essential to note that any exploratory research, including research that aims to be purely quantitative (e.g., an opinion poll on a national sample, using forced-choice questions or Likert-type items) has by default *a qualitative core*. Qualitative thinking about respondent cognitions, behaviors, preferences, emotions, and so forth helps to shape initial ideas. Later on, pilot data has to be collected via interviews, focus groups, critical incident stories, or similar methods, to sharpen the sense of what is important to study or measure, what can be studied or measured, and if so, how it can be systematically studied or measured. Without such preparatory steps, it is not possible to develop a proper measuring instrument, or to evaluate later on how respondents understand the questions or react to certain tasks.

In light of the arguments and examples above, we firmly believe that qualitative thinking and knowledge of relevant qualitative methods should be considered part of the conceptual and methodological preparation of those studying business statistics. (Learners of introductory statistics courses in other disciplines could also benefit from knowing about the existence of such methods.) Further, we argue that qualitative methods should not be relegated to separate "research methods" courses that are taken later as a separate unit. Indeed, recent texts on research methods used in the social and behavioral sciences (e.g., Cohen et al., 2007) as well as in management programs (e.g., Bryman & Bell, 2007) emphasize the coexistence of qualitative and quantitative aspects in the research process. Calls for instruction in mixed method research are also emerging (Johnson & Onwuegbuzie, 2004; Murtonen et al, 2007). In fact, the introduction of new ways of teaching quantitative methods in integration with selected qualitative methods is in itself worthy of further experimentation and research as we also believe that a balance in skills and use of qualitative and quantitative methods is required.

How does one integrate the teaching of qualitative methods into an otherwise quantitatively-focused course? Although this issue goes beyond the scope of this paper, based on our own experience and the literature (e.g., Murtonen et al., 2007; Ridenour & Newman, 2008), several directions can be considered:

- Students should be made aware of the existence of qualitative techniques during the introduction of the standard research process (e.g., problem formulation and research planning) at the beginning of a statistics course.
- Students can then learn when and how selected qualitative methodologies can be used to enhance traditional quantitative research, depending on the research questions at hand.
- One can emphasize the critical role of qualitative methods in pilot studies, in the design and testing of measurement tools and questionnaires, or in needs assessments and marketing research.
- Additionally, a solid exposure not only to advantages but also to limitations of *quantitative* methods should be provided. Paradoxically, such limitations are listed in the literature advocating the use of qualitative methods and techniques–yet are usually missing from statistics textbooks!

The above and other options (see Franklin, 2001, or Clark & Lang, 2002), can be combined with reading of selected papers illustrating business-related research studies. Many interesting examples exist in research on consumer services, tourism and hospitality, and health services, where qualitative and quantitative methods are often combined.

The integration of qualitative elements into traditionally quantitative courses in business statistics surely will be met with skepticism from veteran teachers who believe that statistical methods should not be “watered down” by inexact methods. However, our experience is that students, more so than instructors, are quick to identify the inherent logic of mixed methods, especially if instruction does not focus on presenting a long laundry list of isolated techniques, but instruction is problem-based, i.e., starts with the “need to know” that exists in real business situations. Such an approach can help business students to realize that some aspects of qualitative methods are part and parcel of every research process in applied settings and hence familiarity with the logic and mutual influences of qualitative and quantitative methods is imperative.

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