REVIEW OF MARKETING RESEARCH

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Series Editor: Naresh K. Malhotra

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INTRODUCTION: ANALYZING ACCUMULATED KNOWLEDGE AND INFLUENCING FUTURE RESEARCH

OVERVIEW

Review of Marketing Research, now in its seventh volume, is a fairly recent publication covering the important areas of marketing research with a more comprehensive state-of-the-art orientation. The chapters in this publication review the literature in a particular area, offer a critical commentary, develop an innovative framework, and discuss future developments, as well as present specific empirical studies. The first six volumes have featured some of the top researchers and scholars in our discipline who have reviewed an array of important topics. The response to the first six volumes has been truly gratifying, and we look forward to the impact of the seventh volume with great anticipation.

PUBLICATION MISSION

The purpose of this series is to provide current, comprehensive, state-of-the-art articles in *Review of Marketing Research*. Wide-ranging paradigmatic or theoretical, or substantive agendas are appropriate for this publication. This includes a wide range of theoretical perspectives, paradigms, data (qualitative, survey, experimental, ethnographic, secondary, etc.), and topics related to the study and explanation of marketing-related phenomenon. We reflect an eclectic mixture of theory, data, and research methods that is indicative of a publication driven by important theoretical and substantive problems. We seek studies that make important theoretical, substantive, empirical, methodological, measurement, and modeling contributions. Any topic that fits under the broad area of ''marketing research'' is relevant. In short, our mission is to publish the best reviews in the discipline.

Thus, this publication bridges the gap left by current marketing research publications. Current marketing research publications such as the *Journal of*

Marketing Research (USA), *International Journal of Marketing Research* (UK), and *International Journal of Research in Marketing* (Europe) publish academic articles with a major constraint on the length. In contrast, *Review of Marketing Research* will publish much longer articles that are not only theoretically rigorous but also more expository, with a focus on implementing new marketing research concepts and procedures. This will also serve to distinguish this publication from *Marketing Research* magazine published by the American Marketing Association (AMA).

Chapters in *Review of Marketing Research* should address the following issues:

- Critically review the existing literature.
- Summarize what we know about the subject – key findings.
- Present the main theories and frameworks.
- Review and give an exposition of key methodologies.
- Identify the gaps in literature.
- Present empirical studies (for empirical papers only).
- Discuss emerging trends and issues.
- Focus on international developments.
- Suggest directions for future theory development and testing.
- Recommend guidelines for implementing new procedures and concepts.

CHAPTERS IN THE FIRST VOLUME

The inaugural volume exemplified the broad scope of the *Review of Marketing Research*. It contained a diverse set of review chapters covering areas such as emotions, beauty, information search, business and marketing strategy, organizational performance, reference scales, and correspondence analysis. These chapters were contributed by some of the leading scholars in the field, five of them being former editors of major journals (*Journal of Marketing* and *Journal of Consumer Research*).

Johnson and Stewart provided a review of traditional approaches to the analysis of emotion in the context of consumer behavior. They reviewed appraisal theory and discussed examples of its application in the contexts of advertising, customer satisfaction, product design, and retail shopping. Holbrook explored and reviewed the concept of beauty as experienced by ordinary consumers in their everyday lives. His typology conceptualized everyday usage of the term ''beauty'' as falling into eight categories distinguished on the basis of three dichotomies: (i) extrinsically/intrinsically

motivated; (ii) thing(s)/person(s)-based; and (iii) concrete/abstract. Xia and Monroe first reviewed the literature on consumer information search, and then the literature on browsing. They proposed an extended consumer information acquisition framework and outlined relevant substantive and methodological issues for future research. Hunt and Morgan reviewed the progress and prospects of the "resource-advantage" (R-A) theory. They examined in detail the theory's foundational premises, showed how R-A theory provides a theoretical foundation for business and marketing strategy, and discussed the theory's future prospects. Bharadwaj and Varadarajan provided an interdisciplinary review and perspective on the determinants of organizational performance. They examined the classical industrial organization school, the efficiency/revisionist school, the strategic groups school, the business policy school, the PIMS paradigm, the Austrian school, and the resource-based view of the firm. They proposed an integrative model of business performance that modeled firm-specific intangibles, industry structure, and competitive strategy variables as the major determinants of business performance. Vargo and Lusch focused attention on consumer reference scales, the psychological scales used to make evaluations of marketing-related stimuli, in consumer satisfaction/dissatisfaction (CS/D) and service quality (SQ) research and proposed social judgment–involvement (SJI) theory as a potential theoretical framework to augment, replace, and/or elaborate the disconfirmation model and latitude models associated with CS/D and SQ research. Finally, Malhotra, Charles, and Uslay reviewed the literature focusing on the methodological perspectives, issues, and applications related to correspondence analysis. They concluded with a list of the creative applications and the technique's limitations.

CHAPTERS IN THE SECOND VOLUME

The second volume continued the emphasis of the first by featuring a broad range of topics contributed by some of the top scholars in the discipline. The diverse chapters in the second volume can all be grouped under the broad umbrella of consumer action. Bagozzi developed a detailed framework for consumer action in terms of automaticity, purposiveness, and self-regulation. MacInnis, Patrick, and Park provided a review of affective forecasting and misforecasting. Ratchford, Lee, and Talukdar reviewed the literature related to use of the Internet as a vehicle for information search. They developed and empirically tested a general model of the choice of information sources with encouraging results. Miller, Malhotra, and King

reviewed the categorization literature and developed a categorization-based model of the product evaluation formation process, which assists in the prediction of set membership (i.e., evoked, inert, or inept). Lam and Parasuraman proposed an integrated framework that incorporated a more comprehensive set of various individual-level determinants of technology adoption and usage. Recently, marketing has come under increased pressure to justify its budgets and activities. Lehmann developed a metrics value chain to capture the various levels of measurement employed in this respect. Finally, Oakley, Iacobucci, and Duhachek provided an exposition of hierarchical linear modeling (HLM).

CHAPTERS IN THE THIRD VOLUME

Bolton and Tarasi described how companies can effectively cultivate customer relationships and develop customer portfolios that increase shareholder value. They reviewed the extensive literature on customer relationship management (CRM), customer asset management, and customer portfolio management, and summarized key findings. They examined five organizational processes necessary for effective CRM: making strategic choices that foster organizational learning; creating value for customers and the firm; managing sources of value; investing resources across functions, organizational units, and channels; and globally optimizing product and customer portfolios.

Chandrasekaran and Tellis critically reviewed research on the diffusion of new products primarily in the marketing literature and also in economics and geography. While other reviews on this topic are available, their review differs from prior ones in two important aspects. First, the prior reviews focus on the S-curve of cumulative sales of a new product, mostly covering growth. Chandrasekaran and Tellis focused on phenomena other than the S-curve, such as takeoff and slowdown. Second, while the previous reviews focus mainly on the Bass model, Chandrasekaran and Tellis also considered other models of diffusion and drivers of new product diffusion.

Eckhardt and Houston reviewed, compared, and contrasted cultural and cross-cultural psychological methods. They presented the underlying conceptions of culture that underpin both streams, and discussed various methods associated with each approach. They identified the consumer research questions best answered using each approach and discussed how each approach informs the other. Finally, they examined how consumer research can benefit from understanding the differences in the two approaches. While cultural and cross-cultural perspectives adopt distinct views about culture and

psychological processes, it is possible to view them as complementary rather than incompatible. Several suggestions by Malhotra and colleagues can be useful in this respect (Malhotra, 2001; Malhotra, Agarwal, & Peterson, 1996; Malhotra & Charles, 2002; Malhotra & McCort, 2001; Malhotra, Ulgado, Agarwal, Shainesh, & Wu, 2005). For example, one can start with an etic approach and then make emic modifications to adapt to the local cultures. Alternatively, one can start with an emic perspective and then make etic adaptations to get an understanding across cultures. This systematic theory building and testing process is illustrated by Kim and Malhotra (2005).

Grewal and Compeau synthesized research from consumer behavior, psychology, and applied economics to address how price as an information cue affects consumers' responses in the context of other information cues. They developed a conceptual framework, using adaptation-level theory and transaction utility theory, that synthesized prior research on price, reference price, and other information cues and their effects on consumers' price expectations, evaluations, and behavioral intentions. Their conceptual model contributes to our understanding of the way imperfect information affects consumers' decision processes, goes well beyond the original price–perceived quality paradigm, and integrates knowledge from consumer research, psychology, and applied economics.

Sayman and Raju provided a review of research on store brands. Their review focused on integrating research in key areas and identifying directions for future research. There is limited theoretical and empirical research regarding optimal counterstrategies of national brands against store brands; studies tend to focus on one aspect, and national brand quality is typically assumed to be exogenous. Researchers have, by and large, focused on me-too-type store brands. Future research should consider premium store brand products as well.

Merunka and Peterson examined an intrapersonal aspect of language, namely whether the structure of a language, per se, influences the thoughts of those who speak it. They reviewed empirical research conducted over the past half-century on the effects of language structure on a variety of mental activities. They found support for the weak form of the linguistic relativity hypothesis, the notion that the structure of a language does indeed influence (but not determine) cognition. The estimation of independent and joint effects of language is difficult at best. We need comprehensive studies that incorporate the order in which bilinguals acquire their respective languages, how they acquire their languages, and when they acquire their languages. Future research should also compare the possible influence of a single language on mental processing across different cultures.

Belk discussed the implications of getting visual for research, teaching, and communicating. He identified basic opportunities, threats, and consequences of becoming visual. Several techniques for collecting visual data were discussed in the realm of interviewing as well as observation. We might well be entering a Golden Age of visual and multimedia marketing research, and Belk helps us to get a good handle on it.

CHAPTERS IN THE FOURTH VOLUME

Consistent with the first three volumes, the fourth volume also features a broad array of topics with contributions from some of the top scholars in the field. These chapters fall under the broad umbrella of the consumer and the firm.

Louviere and Meyer consider the literature on behavioral, economic, and statistical approaches to modeling consumer choice behavior. They focus on descriptive models of choice in evolving markets, where consumers are likely to have poorly developed preferences and be influenced by beliefs about future market changes. They call for a better alliance among behavioral, economic, and statistical approaches to modeling consumer choice behavior. Economic and statistical modelers can constructively learn from behavioral researchers and vice versa.

Folkes and Matta identify factors that influence how much an individual consumes on a single usage occasion by drawing on research in consumer behavior as well as allied disciplines. They develop an integrated framework to understand how, and at what stage, various factors affect usage quantity based on Gollwitzer's (1996) "action goals" model. Initially, factors such as a product's price and social norms influence consumption-related goals and their perceived desirability and feasibility. In the next phase, factors such as self-control strategies and product instructions influence the implementation of the goal. Finally, the consumer's motivation to use feedback, and the type of feedback about consumption, has an influence on subsequent goal setting.

Kumar and Luo also examine consumption, but from a modeling perspective. In order to allocate scarce marketing resources efficiently and effectively, it is important for a firm to know what to sell, when to sell, and to whom. Kumar and Luo review how the purchase timing, brand choice, and purchase quantity decisions have been modeled historically, as well as the issues within each decision that have been addressed. A vast majority of these studies use scanner data or transaction data. Since recent research has

shown that common method variance may not be a serious problem (Malhotra, Kim, & Patil, 2006), surveys can also be a useful source of such data and should be increasingly employed.

Despite the interest in global branding, studies involving brand extension strategies in foreign markets remain very limited. The fact that so few studies exist limits our understanding of effective brand extension strategy in a cross-cultural context. Merz, Alden, Hoyer, and Desai propose a new conceptual framework and several propositions regarding effective global brand extension strategy in a cross-cultural context. In doing so, they first review more commonly examined antecedent variables of (national) brand extension evaluation. Then, they propose a definition of culture and subsequently review the existing cross-cultural brand extension research.

Given the growing importance of visual marketing in practice, Wedel and Pieters review eye-tracking research in marketing and evaluate its effectiveness. Specifically, they review eye-tracking applications in advertising (print, TV, and banner), health and nutrition warnings, branding, and choice and shelf search behaviors. Finally, they discuss findings, identify current gaps in our knowledge, and provide an outlook on future research.

Singh and Saatcioglu review different approaches for examining role theory implications for boundary spanners such as salespeople, frontline, and customer contact employees. They focus on universalistic and contingency approaches and develop the configural approach by extending configurational theory principles to role theory. They compare and contrast different approaches and review literature that has remained less accessible to marketing researchers.

John considers price contract design templates governing procurement and marketing of industrial equipment. He argues that price format choices precede the selection of a price level. These price formats are an integral aspect of the institutional arrangement devised to govern an exchange. John reviews institutions, that is, rules of interaction that govern the behavior of actors in dealing with other actors, with a focus on their pricing elements.

CHAPTERS IN THE FIFTH VOLUME

The existence of two discrete, parallel, interactive cognitive systems underlying human judgment and reasoning has been postulated in several psychological and behavioral disciplines (Agarwal & Malhotra, 2005; Malhotra, 2005). One system is relatively unconscious, based on associations, and tends to be rapid. The other system is consciously guided, based

on symbolic manipulation, and tends to be slower. The two systems generally operate in parallel, contributing interdependently to decision outcomes. Bond, Bettman, and Luce review recent developments in consumer behavior in terms of this dual-system paradigm. They first examine a variety of frameworks that have been proposed, focusing on both their commonalities and their application domains. Then, they apply these frameworks to review selected topics from the recent marketing literature including persuasion, metacognition, and immersive experiences.

The chasm is a well-accepted paradigm among new products marketing practitioners that has taken root in the last decade. According to this paradigm, the market for new products is composed of "early" and "mainstream" markets with a "chasm" in between them. A fundamental premise of such an approach is that there is a communication break, at least to some degree, between the consumers in the early adopters and the mainstream market segment. Libai, Mahajan, and Muller examine empirical support for the existence of a communication break in the diffusion of innovations using aggregate product growth data, typically used in the diffusion of innovation research. They review three alternative models due to Bass, Rogers, and Moore. Their results provide some support for the dual-market phenomenon and show the existence of a partial communication break. As the authors point out, aggregate adoption data are not sufficient for answering these questions. More in-depth and disaggregate investigation across various time points should be conducted (Kim & Malhotra, 2005).

Rajagopalan and Bayus explore two of Eric Raymond's key open source product development principles embodied in the bazaar community development model involving developers and users. They empirically examine the relationships between project community size ("eyeballs") and development activity, and between development activity and product adoption. Their analysis supports the premise that "developer eyeballs" are positively related to development activity and that product development activity is significantly related to the speed of product adoption. Thus, they find support for some key principles of the open source bazaar. However, some of their results are contrary to the bazaar model. Therefore, Raymond's bazaar community development model involving developers and users should be revised to accommodate the more typical open source development project. Future research should explore the applicability of different new product diffusion models to open source innovations.

The Segmentation–Targeting–Positioning (STP) process is fundamental to the formulation of marketing strategy (Malhotra, Charles, & Uslay,

2005). DeSarbo, Blanchard, and Atalay briefly review the STP framework and optimal product positioning literature. Then these authors present a new constrained clusterwise multidimensional unfolding procedure for performing STP, in which the brand coordinates are a linear function of product characteristics. Their method simultaneously identifies consumer segments, derives a joint space of brand coordinates and segment-level ideal points, and creates a link between specified product attributes and brand locations in the derived joint space. Generalizing the proposed methodology to the analysis of nonmetric and three-way data would extend the range of applications for this approach.

Conjoint analysis is one of the most versatile methods in marketing research. Although this method has been popular in practice, one serious constraint has been dealing with the large numbers of attributes that are normally encountered in many conjoint analysis studies. Rao, Kartono, and Su review 13 methods for handling a large number of attributes that have been applied in various contexts. They discuss the advantages and disadvantages of these methods. Based on their analysis, three methods, that is, self-explicated method, partial profiles method, and upgrading method, seem to stand out and merit consideration by researchers in this area. Yet, no single study has systematically evaluated these potential alternative methods in the context of a specific applied problem. It would be worthwhile to conduct large-scale empirical and simulation studies to compare the methods.

Laddering is a qualitative research technique that has great potential to uncover the factors underlying consumer decision making. However, this potential has not been realized because the time and costs of this qualitative technique as well as the lack of standard statistical measures to assess data and solution quality have been obstacles. Reynolds and Phillips assess the laddering research practices of both professional and academic researchers. They propose a set of quality metrics, and demonstrate the use of these measures to empirically compare the traditional face-to-face interviewing method with an online one-on-one interviewing approach.

The Internet provides marketers with an expanded set of communications vehicles for reaching customers (Kim & Malhotra, 2005; Malhotra, Kim, & Agarwal, 2004). Two of the important and fast-growing elements of this new communications mix are online advertising and electronic word of mouth (WOM). Bucklin, Rutz, and Trusov review recent research developments in marketing that are most relevant to assessing the impact of these communications vehicles. They first discuss the two major forms of Internet advertising, display advertisements (also known as banners) and paid

search. Online communities, social networking sites, online referral programs, product reviews, and blogs all allow WOM to spread faster and farther than in the past. Research has shown how electronic records of online WOM (e.g., product reviews) can be connected, via models, to performance outcome variables such as product ratings and sales levels.

CHAPTERS IN THE SIXTH VOLUME

The sixth volume also reflects an eclectic mixture of theory, measurement, data, and research methods, reinforcing the mission of *Review of Marketing Research*.

The purchase of products is at the heart of much of consumer and marketing research. Baumgartner provided a review of prior classifications of purchase behavior discussing their strengths and weaknesses. He proposed a new, empirically derived typology based on purchase motives. A classification of 44 different purchase behaviors reflecting various purchase motives yielded a typology of 8 distinct types of purchase behavior based on three underlying dimensions. These dimensions were functional versus psychosocial purchases, low versus high purchase involvement, and spontaneous versus deliberate purchases. Baumgartner's typology better captures the important dimensions underlying different forms of buying behavior.

Singh and Jain focused on the literature related to the measurement of customer lifetime value (CLV). They highlighted the issues related to the context of CLV measurement and proposed a contextual framework for understanding and categorizing models of CLV. They also reviewed the major models for measuring CLV in different contexts and discussed their comparative strengths and weaknesses. Finally, they identified the key issues that impact CLV but have not been adequately considered in modeling CLV. These factors included network effects (e.g., WOM effects), cost of customer acquisition, cost of managing customer relationships, cross-selling, competition, forecasting and planning, and endogeneity of CLV drivers.

Sriram and Chintagunta discussed learning models in the context of consumer choice. Consumers may experience uncertainty when the agent is new to the context or the choice set has new alternatives. Consumers resolve uncertainty regarding products or their characteristics in such contexts by making use of learning models. Sriram and Chintagunta provide a critical review of the learning literature in marketing and economics, with a focus

on models in which consumers update their beliefs in a Bayesian fashion with the extent of updating being related to their perceived precision of the signals that aid in such learning. They discussed several possible extensions of the learning literature with an emphasis on biased signals, changing value of the unknown entity, and integration of Bayesian and alternative learning mechanisms. They also identified some directions for future research in this area.

O'Hern and Rindfleisch discussed customer cocreation in the context of new product development. Customers are active cocreators of the products they buy and use, and in some cases, are capable of creating new products with little help from firms. They identify the origins of this paradigm shift and present a conceptual typology of four different types of cocreation activity. Customer cocreation involves two key processes: contribution by way of submitting content and selection by choosing which of these submissions will be retained. Using these two processes as a foundation, the authors offer a conceptual typology of four different forms of customer cocreation. Based on this emerging paradigm, they offer an agenda for future research. Their agenda focuses on the impact of customer cocreation on six distinct domains of inquiry: (1) organizational culture, (2) organizational learning, (3) organizational dynamics, (4) resources and capabilities, (5) customer valuation, and (6) brand communities.

Return on marketing investment (ROMI) metric holds promise in increasing the accountability for marketing spending. However, many organizations experience several roadblocks to measuring ROMI and using it to make better marketing decisions and achieve higher performance. Pauwels and Reibstein discussed the challenges in measuring ROMI. They defined ROMI as the incremental margin generated by a marketing program divided by the cost of that program at a given risk level. They discussed 10 such roadblocks, gave examples, and critically examined how research has addressed and should further address these issues.

The service-dominant (S-D) logic shifts the focus of marketing away from the production and distribution of goods (goods-dominant logic) toward service, the application of operant resources (knowledge and skills), as the basis of exchange. The central tenet of S-D logic is that reciprocal service is the fundamental basis of economic exchange, that is, *service is exchanged for service*. Vargo, Lusch, Akaka, and He gave a review and assessment of the S-D logic. They presented an S-D logic perspective of the market and marketing and summarized its current state of development. They clarified major theoretical misconceptions and reviewed the extension of S-D logic and its integration with existing knowledge. They provided an assessment of

the role of S-D logic in the evolution of academic marketing, and identified directions for future research in this area. Initially, S-D logic was not developed as a testable theory, and there is a great need to further develop testable hypotheses based on the service-centered mindset. Moreover, these hypotheses should be empirically tested in a variety of settings so that a wealth of findings could accumulate.

Dutta, Bergen, and Ray dealt with costs of price adjustments in marketing. They reviewed the literature in marketing and economics to summarize what we know about the nature, magnitude, and the broad impact of these costs. The literature on the nature and scope of these costs has been evolving, from simple menu costs to richer decision-making, organizational, and customer-based costs. These costs have substantial implications for research in pricing; they influence the magnitude and frequency of price changes, asymmetric pricing, pass-through in channels, and price synchronization. The authors also identified some areas of potential interest, where consideration of price adjustment costs is likely to yield greater insights into marketing decisions for both researchers and practitioners. Their basic conclusion was that there are significant domains of pricing decisions that are under-researched from the perspective of price adjustment costs. An explicit consideration of these costs should lead to greater understanding of pricing and also to better pricing decisions.

CHAPTERS IN THIS VOLUME

Ford, West, Magnini, LaTour, and Polonsky provide a content analysis of the *Journal of Marketing* (*JM*), the *Journal of Marketing Research* (*JMR*), the *Journal of Consumer Research* (*JCR*), and the *Journal of the Academy of Marketing Science* (*JAMS*) over the period 1977–2002. They survey 4,463 articles, and their analysis reveals the leading authors, institutions, and topics. The top three authors based on publications in all the four journals combined over the 25 years are Morris Holbrook, Elizabeth Hirschman, and Naresh K. Malhotra. The top three authors in *JM* are Shelby Hunt, George Day, and Peter Dickson. The top three authors in *JMR* are William Dillion, Paul Green, and Naresh K. Malhotra. The top three authors in *JCR* are Morris Holbrook, Elizabeth Hirschman, and Russell Belk. The top three authors in *JAMS* are Naresh K. Malhotra, Charles Lamb, and Kenneth Teas. The top three schools based on publications in all the four journals are University of Pennsylvania, University of Wisconsin, and Columbia University. The leading topics are characterized by journal. This study is

very significant because it analyzes publications in all the top marketing journals over an extended period of 25 years.

Houston, Ratneshwar, Ricci, and Malter develop an integrative conceptualization of how firms set and alter strategic goals, where goals are defined as ideals of future, desired end states. They incorporate insights from goal-setting literatures across the disciplines of marketing, management, and psychology in an integrative manner. They offer a detailed examination of goal-setting processes within the context of an integrative behavioral view of the firm and shed light on the microprocesses by which resources become intertwined with managerial processes to shape the strategic efforts that lead to growth of the firm. They develop a framework that accounts for the internal and external forces that impact the content of a firm's goals as well as the dynamic processes by which these goals are formed and changed over time. In proposing this framework, they offer useful insights into organizational goals that connect firm resources and environmental context to firm strategies. They also report a case study of a Fortune 100 communication firm's entry into an emerging, high-technology, new product marketplace. This case study provides illustrative data in support of their framework.

Anderson, Simester, and Zettelmeyer investigate the problems that firms confront when introducing an Internet channel. Their work is important as the complexity of problems can easily lead to misinterpretations and inappropriate corrective action. They conduct a large-scale study that presents a unique opportunity to identify the problems and key concerns that firms face when they transition to an additional channel of distribution, and the solutions that make the transition successful. Their research identified three types of problems. The Internet: (1) threatens relationships between existing channel members, (2) leads to coordination problems, and (3) destroys traditional segmentation criteria. Their study makes significant contributions to the literature. It provides managers with a framework to help anticipate and understand the challenges they can expect when introducing an Internet channel. Furthermore, it presents a menu of alternatives that managers can use to address the challenges when they arise. It also provides a series of questions that managers can ask to help identify which solutions are appropriate to their firms.

Hada, Grewal, and Lilien highlight one more "equity" in marketing discipline, namely referral equity. From the perspective of a supplier, a referral may be considered a recommendation from A (the referrer) to B (the potential customer) that B should, or should not, purchase from C (the supplier firm). Thus, a referral is a triadic exchange relationship among

the referrer, potential customer, and supplier firm. The authors argue that referrals should be viewed as part of the supplier firm's marketing and sales activities. They focus on three types of referrals – customer-to-potential customer referrals, horizontal referrals, and supplier-initiated referrals. All three types of referrals have critical roles in a potential customer's purchase decision. *Referral equity* captures the net effect of all referrals for a supplier firm in the market. Referral equity should be viewed by supplier firms as a resource that has financial value to the firm as it affects the firm's cash flows and profits. The authors offer several strategies firms can use to manage referrals and build referral equity and outline a research agenda for the future. By proposing the concept of referral equity, these authors link referrals to the firm's financial performance and thus contribute to research on the marketing–finance interface.

Dholakia reviews research on the *question–behavior effect* (QBE), the phenomenon that asking questions influences respondents' behavior. In this regard, he covers two distinct research streams, the *self-prophecy effect* that concerns socially normative behaviors and the *mere measurement effect* that deals with purchase behaviors without socially normative significance. Mere measurement studies concern purchase behaviors that are normatively neutral in that acting or not acting does not have socially desirable or undesirable elements from the consumer's standpoint. In contrast, self-prophecy studies exclusively examine socially normative behaviors. Although there have been recent attempts at integrating these two streams, the author argues that there are fundamental differences between the two effects. He also makes distinctions between laboratory- and field-based mere measurement effects, and between normatively consistent and implicit attitude-driven, normatively inconsistent self-prophecy effects. For the sake of advancing knowledge regarding the QBE most efficiently, it seems prudent to retain the distinct labels of the two effects, rather than abandoning them in favor of the common "QBE" label. Dholakia reviews key studies, offers theoretical explanations, and discusses moderators of each effect. He identifies potentially unanswered questions and research opportunities, and discusses significant managerial and policy implications.

Malhotra, Jain, Patil, Pinson, and Wu address one aspect of the broad issue of the psychological foundations of the dimensions of MDS solutions by focusing on consumer cognitive complexity. Using empirical data from three independent studies, they show that the dimensionality of MDS solutions is negatively related to individual differences in the level of cognitive differentiation and integrative complexity of individuals, and positively related to the individual's ability to discriminate within

dimensions. In addition, they also show that MDS dimensionality is affected by a variety of task-related variables such as perceived task difficulty, consistency in providing similarity judgments, confidence, familiarity, and importance attached to the stimuli. They raise the issue of whether MDS can be validly used to describe complex cognitive processes. Their results indicate that it may not be appropriate to view the spatial representations obtained by MDS as an accurate reflection of either consumers' cognitive structural characteristics (e.g., cognitive complexity) or the cognitive process leading to the formation of product judgments, particularly when these stimuli are complex and involve higher order integrative aspects.

Structural equation models are usually based on the assumption that the data being analyzed come from a homogeneous population, so that a unique global model represents all the observations well. However, this assumption of homogeneity may be unrealistic in many real world applications. Like structural equation modeling (SEM), the complementary technique of partial least squares (PLS) path modeling helps researchers understand relations among sets of observed variables. Rigdon, Ringle, and Sarstedt point out that like SEM, PLS began with an assumption of homogeneity – one population and one model – but has developed techniques for modeling data from heterogeneous populations, consistent with a marketing emphasis on segmentation. One way to express heterogeneity is through interactions and nonlinear terms. Additionally, multiple group analysis and latent class methods can also be employed. Rigdon, Ringle, and Sarstedt review these techniques for modeling heterogeneous data in PLS. They also illustrate key developments in finite mixture modeling in PLS using the SmartPLS 2.0 (M3) package. Heterogeneity presents both a challenge and an opportunity. Ignoring heterogeneity can produce misleading results, and the estimated parameter may be incorrect for every single respondent. Acknowledging heterogeneity may well force researchers to collect larger sample sizes, so that models can be reliably estimated for all meaningful segments. However, this offers researchers the opportunity to better fit models to the patterns of variance actually observed in the data, and to better understand the underlying phenomenon. It should be pointed out that a recent study comparing alternative approaches to SEM yielded results that indicate caution should be exercised when using PLS (Hwang, Malhotra, Kim, Tomiuk, & Hong, 2010).

It is hoped that collectively the chapters in this volume will substantially aid our efforts to understand, model, and make predictions about both the firm and the consumer and provide fertile areas for future research. The *Review of Marketing Research* continues its mission of systematically

analyzing and presenting accumulated knowledge in the field of marketing as well as influencing future research by identifying areas that merit the attention of researchers.

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Editor

A BACKWARD GLANCE OF WHO AND WHAT MARKETING SCHOLARS HAVE BEEN RESEARCHING, 1977–2002

John B. Ford, Douglas West, Vincent P. Magnini, Michael S. LaTour and Michael J. Polonsky

ABSTRACT

Despite the diversity of all those involved within the marketing discipline, all have a stake in maximizing the advancement of marketing knowledge. Without a specific analysis it is difficult to reflect on where a field has been or where it might be heading. The purpose of this chapter is to examine who and what marketing scholars have been researching over the period 1977–2002 using content analysis. This chapter provides longitudinal benchmarking of the ''inputs'' (authors and institutions) and ''outputs'' (articles) examining the marketing literature in the four major marketing journals: the Journal of Marketing, *the* Journal of Marketing Research, *the* Journal of Consumer Research, *and the* Journal of the Academy of Marketing Science.

INTRODUCTION

This chapter provides longitudinal benchmarking of the "inputs" (authors and institutions) and "outputs" (articles) examining the marketing literature. Few will argue that these are key drivers of the tremendous energy, time, resources, and talent focused on these endeavors. Yet, even beyond the face value of such analyses is the value of such results being reflecting points concerning the value of scholarship in the four major marketing journals: the *Journal of Marketing*, the *Journal of Marketing Research*, the *Journal of Consumer Research*, and the *Journal of the Academy of Marketing Science* (hereafter *JM*, *JMR*, *JCR*, and *JAMS*, respectively). Commonly students, faculty, practitioners, and other interested stakeholders periodically review the output of journals or search for specific topics on databases. Despite the diversity of all those involved within the marketing discipline, all have a stake in maximizing the advancement of marketing knowledge. Without a specific analysis it is difficult to reflect on where a field has been or where it might be heading. The purpose of this chapter is to examine who and what marketing scholars have been researching over the period 1977–2002 using content analysis. The following sections feature detailed rankings of authors and institutions as well as longitudinal topic analysis (broken down by journal) along with the overall citation impact of the four journals.

METHOD

Pasadeos, Phelps, and Bong-Hyun (1998) suggested that the scholarly literature can be categorized along six dimensions. *Comprehensive reviews* aim to establish heuristics or paradigms on the conclusions reached in a large number of studies on a particular topic (e.g., Arndt, 1986). *Publishing productivity* studies assess the contributions of particular authors and institutions (e.g., Barry, 1990; Henthorne, LaTour, & Loraas, 1998; Ford, LaTour, & Henthorne, 2001). *Meta-analyses* are based on the findings from multiple studies to provide data-based conclusions (e.g., Crouch, 1996). *Methodological* studies review the research methods used across studies within the same topic or same discipline (e.g., Kolbe & Burnett, 1991; Pitt, Berthon, Caruana, & Berthon, 2005; van der Merwe, Berthon, Pitt, & Barnes, 2007). In-depth reviews of one or more publications are provided by *specific journal investigations* (e.g., Leong, 1989; Malhotra, 1996), and finally, *citation analyses* are concerned with the references

provided in articles (e.g., Baumgartner & Pieters, 2003) and co-citation networks (Pasadeos et al., 1998). This study offers a combination of publishing productivity, comprehensive reviews, and citation analyses of specific journals (*JM*, *JMR*, *JCR*, and *JAMS*).

A content analysis was seen as preferable to a survey of the Editorial Advisory Boards of each journal to provide an overview of marketing research trends. The main difficulty is that relatively few current board members would be well placed to comment on the past 20+ years of marketing publishing. Furthermore, the prime alternative of a content analysis of publications provides an unobtrusive ex post facto evidence of the predilections of authors, reviewers, and editors. As well, many of the variables did not require judgmental coding, principally the number of authors, their names, their institutions, and the citation impact. Given the potential multiplicity of categories, the grouping of topics was the most subjective aspect of the study. To address the problem it was decided to categorize each article by the major topic classifications. Eighteen topic classifications were identified and coded by a research assistant. These were (alphabetically): advertising, consumer behavior, industrial/channels, international marketing, internet marketing, legal issues, marketing education, marketing ethics, marketing research, marketing strategy, marketing theory, pricing, product/brand, relationship marketing, retailing, sales management, sales promotion, and services marketing. After a full briefing the research assistant then coded a random sample of 20 papers that were checked by two of the authors. Several ambiguous codings were alerted by the research assistant, and these were resolved by further careful reading by both the assistant and authors. Lastly all articles were independently reviewed by two of the authors for final classification. Topical analysis by journal was separated into five-year blocks. All commentary articles were removed from the analysis. Noted are trends over time as to managerial implications as well as a proportional breakdown of empirical vis-à-vis conceptual articles. Also included was a measure of academic impact by presenting the Social Science Citation Index "impact factor" scores for *JM*, *JMR*, *JCR*, and *JAMS* for 1997–2002.

INPUTS

Authors

Starting with the broad picture, there were 4,463 articles published in *JM*, *JMR*, *JCR*, and *JAMS* over the period 1997–2002 (see Table 1) involving

Table 1.   Author Appearances Per Journal, 1977–2002.

No. of Appearances	All 4	JM	JMR	JCR	JAMS
14	11	–	–	–	–
13	10	–	–	–	–
12	16	–	–	–	–
11	21	–	–	–	–
10	20	–	–	–	–
9	27	–	–	–	–
8	40	–	–	–	–
7	56	–	–	–	–
6	74	–	17	13	–
5	108	–	36	23	–
4	166	41	51	49	36
3	241	61	91	85	67
2	491	166	213	175	166
1	1817	764	776	659	825
Total no. of appearances	7866	1076	1223	1043	1121
Total no. of articles	4463	1758	2377	2040	1691
Mean author/article	1.76	1.63	1.94	1.96	1.51

7,866 authors for an average of just under 2 people per article (1.76). Seventy-eight individuals appeared 10 or more times in all four journals with 11 people achieving a maximum of 14 appearances. Taking each journal in turn: 41 people appeared four times in *JM*; 104 had four plus appearances in *JMR* with the maximum being 17 who had six appearances each; in *JCR* 85 had four plus appearances with 13 achieving six appearances each; and finally, 36 people appeared four times in *JAMS*. It can also be seen in the table that both *JMR* and *JCR* averaged slightly below 2 authors per article, whereas *JM* was at 1.63 and *JAMS* the lowest at 1.51.

The top 10 publishing authors, based on adjusted publications, for all four and each journal can be seen in Table 2 (please note that there was a tie for the 10th place in *JAMS*, so this table features 11 people). The second column shows the weighted average ranking, that is, taking into consideration number of coauthors involved, for example, if an article has three authors – each is given one-third credit. Absolute ranking (based on total number of appearances) features in the third column. The most prolific author was Morris Holbrook with an adjusted ranking of just over 18 based on 35 appearances in the top four journals which represents 1.4 articles per year average over 1997–2002. Holbrook is then followed in turn by Hirschman, Malhotra, Bagozzi, Hunt, Green, Lehmann, Bearden,

Table 2. Top Publishing Authors, 1977–2002.

Top 10	Adjusted[a] Publications	Total Publications
All 4		
Holbrook, Morris	18.07	35
Hirschman, Elizabeth	18.00	20
Malhotra, Naresh	15.23	21
Bagozzi, Richard	14.16	22
Hunt, Shelby	13.97	25
Green, Paul	13.97	31
Lehmann, Donald	13.28	29
Bearden, William	11.04	28
Meyers-Levy, Joan	10.50	17
Day, George	10.33	15
JM		
Hunt, Shelby	7.16	12
Day, George	6.83	11
Dickson, Peter	6.16	9
Frazier, Gary	5.99	12
Varadarajan, P. Rajan	5.81	11
Cohen, Dorothy	5.00	5
Morgan, Fred	4.99	7
Deshpande, Rohit	4.83	6
Heide, Jan	4.66	9
Singh, Jagdip	4.66	6
JMR		
Dillon, William	8.06	18
Green, Paul	7.06	15
Malhotra, Naresh	6.91	9
Srinivasan, V.	6.74	15
Churchill, Gilbert, Jr.	5.91	12
Kamakura, Wagner	5.58	11
Bagozzi, Richard	5.5	8
Fornell, Claes	5.5	10
Lehmann, Donald	5.38	13
Holbrook, Morris	5.33	8
JCR		
Holbrook, Morris	10.74	23
Hirschman, Elizabeth	10.00	11
Belk, Russell	9.15	15
Meyers-Levy, Joan	8.00	12
Janiszewski, Chris	6.50	9
Bearden, William	6.14	15
Lynch, John, Jr.	6.03	13
Mick, David Glen	6.00	9
Richins, Marsha	6.00	7
John, Deborah Roedder	5.66	10

Table 2. (*Continued*)

Top 10	Adjusted[a] Publications	Total Publications
JAMS (11)		
Malhotra, Naresh	5.49	8
Lamb, Charles	4.91	11
Teas, R. Kenneth	4.50	6
Varadarajan, P. Rajan	4.41	8
Ferrell, O. C.	4.32	10
Hunt, Shelby	4.15	8
Sirgy, M. Joseph	3.87	6
Lumpkin, James	3.66	7
Lusch, Robert	3.66	7
Akaah, Ishmael	3.50	
Futrell, Charles	3.50	

[a]*Note:* Adjusted $= (1/$ no. of authors) per author.

Meyers-Levy, and Day with an adjusted range of 18 to just over 10 based on 20 to 15 publications, respectively. Looking at the other journal breakdowns the top *JM* author is Shelby Hunt, the top *JMR* William Dillon, the top *JCR* Morris Holbrook and Naresh Malhotra for *JAMS*. Looking at the overall picture, the breakdown by journals indicates that a large number of authors have appeared in more than one of these outlets and it shows that a wide range of audiences are being reached by the work of these particular individuals.

Institutions

In terms of institutional impact based on adjusted appearances, the top institution across all four is the University of Pennsylvania with a score of just under 104 based on 216 publications. Pennsylvania is then followed by Wisconsin, Columbia, Northwestern, Texas at Austin, NYU, Indiana, Texas A&M, Illinois, and the California at Los Angeles ranging from just an adjusted of over 95 to 60 based on 185 to 104 publications, respectively. The list changes when appearances are adjusted to reflect multiple authors (see Table 3). Looking at specific journals the University of Pennsylvania features strongly at *JM* and *JMR* and tops the lists for each journal. Columbia University features strongly at *JCR* and Texas A&M University at *JAMS*.

Table 3. Top Publishing Institutions, 1977–2002.

Top 10	Adjusted[a] Publications	Total Publications
All 4		
University of Pennsylvania	103.64	218
University of Wisconsin	95.22	185
Columbia University	92.74	179
Northwestern University	76.58	142
University of Texas at Austin	73.34	152
New York University	69.12	126
Indiana University	68.64	141
Texas A&M University	67.3	137
University of Illinois	61.29	110
University of California, Los Angeles	60.07	104
JM		
University of Pennsylvania	22.81	48
Texas A&M University	19.93	49
University of Texas at Austin	19.71	42
Indiana University	18.61	38
Harvard University	18.46	33
University of Wisconsin	17.49	33
University of Southern California	16.63	26
Texas Tech University	15.91	32
New York University	15.65	30
Columbia University	15.13	28
JMR		
University of Pennsylvania	43.49	97
University of Wisconsin	36.61	71
Northwestern University	33.04	63
Columbia University	32.47	64
University of Texas at Austin	29.62	58
University of California, Los Angeles	26.69	52
Stanford University	25.91	52
New York University	24.04	45
Indiana University	21.33	46
University of Michigan	20.67	48
JCR		
Columbia University	43.14	84
University of Florida	34.83	66
University of Wisconsin	33.33	66
University of Pennsylvania	28.53	58
University of Illinois	26.64	46
Northwestern University	25.89	47
University of California, Los Angeles	25.38	41
New York University	24.93	45
University of Michigan	21.98	38
Duke University	20.91	46

Table 3. (*Continued*)

Top 10	Adjusted[a] Publications	Total Publications
JAMS		
Texas A&M University	32.3	58
Arizona State University	17.13	36
Virginia Tech	16.33	36
University of Miami	15.39	34
University of Alabama	11.73	26
Georgia State University	11.47	21
University of Kentucky	11.22	15
Texas Tech University	10.54	25
Bowling Green State University	10.33	18
Kent State University	10.33	16

[a]*Note*: Adjusted = (1/ no. of institutions) per institution.
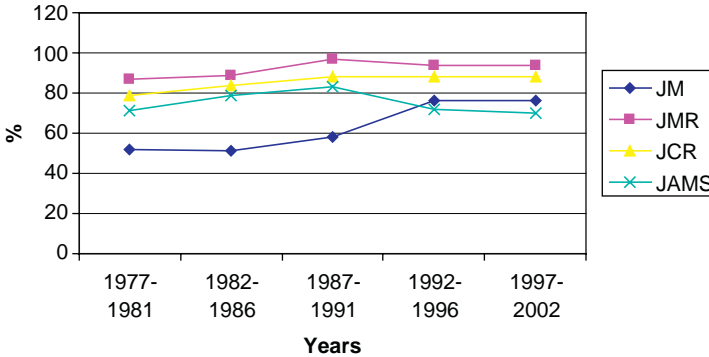
Fig. 1.   Percent of Empirical Articles.

OUTPUTS

Topics

Empirical studies have noticeably increased as a proportion of the content of *JM* over the period from just over 50 percent in the first benchmark period (1977–1981) to over 75 percent of output in the last (1997–2002), representing an average of 63 percent over 1977–2002 (see Fig. 1). By contrast, the other three have consistently featured empirical work, particularly *JMR* which started off at just under 90 percent in benchmark one and had a period for an average of 92 percent. Articles with managerial
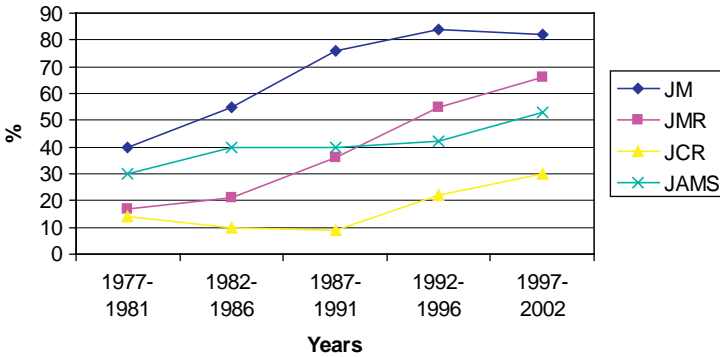
Fig. 2. Articles with Managerial Implications.

implications have increased noticeably over the benchmark periods (see Fig. 2). By nature *JM*, *JMR*, and *JAMS* have the strongest managerial orientations and reflect the most dramatic shift in emphasis in this direction over the 26-year period, for example, with *JM* going from 40 to 82, *JMR* from 17 to 66, and *JAMS* from 30 to 53. However, *JCR* increased managerial-based output from only 14 to 30 percent over the same period. Overall, this is broadly a positive trend as there is a need for bridge building between basic research and managerial thinking (Hanna, 2001).

The plethora of research topics covered in these top journals (see Tables 4–7) reflects the diversity of the mosaic scholarship within the discipline. While *JMR* and *JCR* are more narrowly focused on particular subjects than *JM* or *JAMS*, it is interesting to see the broadening of topics that has been occurring for both of these journals since 1977. The topics are grouped in these tables in five-year blocks, and it is interesting to note the changes over the 26 years. *JM* has maintained a fairly broad range of topics over the period with a focus on marketing strategy (19 percent over the entire period) and consumer behavior (12 percent) and to a lesser extent marketing theory (9 percent), advertising (8 percent), and marketing research (7 percent). However, there has been a lessening of focus on marketing theory, advertising, and to some extent marketing research with a significant fall in legal issues by the last benchmark period of 1997–2002. On the other hand, *JM* gave increasing attention to services, product and brand, relationship marketing, and albeit small (given the lateness of arrival in the period under study) internet marketing. *JMR* has begun to focus more heavily on such topics as marketing strategy, consumer behavior, and product/brand issues while *JCR* has branched out to include such topics as

Table 4. *Journal of Marketing* Leading Topics.

Article Primary Topic	1977–1981		1982–1986		1987–1991		1992–1996		1997–2002		1977–2002	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Marketing strategy	34	19	43	19	20	15	25	18	40	22	162	19
Consumer behavior	21	12	27	12	17	13	21	15	14	8	100	12
Marketing theory	26	15	14	6	22	16	7	5	8	4	77	9
Advertising	20	11	16	7	12	9	9	6	10	5	67	8
Marketing research	14	8	33	15	5	4	4	3	2	1	58	7
Industrial/channels	10	6	8	4	13	10	6	4	17	9	54	6
International marketing	5	3	14	6	10	7	12	9	11	6	52	6
Sales management	10	6	10	5	6	4	13	9	10	5	49	6
Services marketing	4	2	2	1	7	5	13	9	20	11	46	5
Product/brand	7	4	13	6	3	2	6	4	17	9	46	5
Legal issues	8	4	20	9	5	4	1	1	1	1	35	4
Marketing ethics	5	3	7	3	4	3	8	6	3	2	27	3
Pricing	5	3	4	2	4	3	5	4	7	4	25	3
Retailing	5	3	3	1	4	3	3	2	6	3	21	2
Relationship marketing	0	0	0	0	2	1	6	4	10	5	18	2
Marketing education	2	1	7	3	0	0	0	0	1	1	10	1
Sales promotion	3	2	1	0	1	1	0	0	3	2	8	1
Internet marketing	0	0	0	0	0	0	1	1	2	1	3	0
Total	179	100	222	100	135	100	140	100	182	100	858	100

Table 5.　*Journal of Marketing Research* Leading Topics.

Article Primary Topic	1977–1981		1982–1986		1987–1991		1992–1996		1997–2002		1977–2002	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Marketing research	160	89	124	56	101	75	57	41	44	24	486	42
Consumer behavior	47	26	22	10	27	20	30	21	44	24	170	15
Marketing strategy	17	9	8	4	15	11	31	22	51	28	122	11
Advertising	23	13	19	9	24	18	12	9	13	7	91	8
Product/brand	2	1	6	3	4	3	15	11	37	20	64	6
Sales management	18	10	13	6	10	7	6	4	3	2	50	4
Industrial/channels	6	3	14	6	7	5	9	6	3	2	39	3
Pricing	4	2	3	1	2	1	8	6	8	4	25	2
Marketing theory	12	7	5	2	2	1	1	1	0	0	20	2
International marketing	3	2	3	1	3	2	2	1	5	3	16	1
Sales promotion	0	0	1	0	4	3	2	1	9	5	16	1
Retailing	2	1	2	1	3	2	4	3	2	1	13	1
Relationship marketing	0	0	0	0	2	1	5	4	3	2	10	1
Marketing ethics	0	0	1	0	2	1	2	1	2	1	7	1
Services marketing	0	0	1	0	0	0	0	0	5	3	6	1
Legal issues	5	3	0	0	0	0	0	0	0	0	5	0
Marketing education	1	1	0	0	0	0	0	0	2	1	3	0
Internet marketing	0	0	0	0	0	0	0	0	1	1	1	0
Total	300	100	222	100	206	100	184	100	232	100	1144	100

Table 6. *Journal of Consumer Research* Leading Topics.

Article Primary Topic	1977–1981		1982–1986		1987–1991		1992–1996		1997–2002		1977–2002	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Consumer behavior	119	65	130	60	125	57	116	56	135	67	625	61
Marketing research	30	16	29	13	22	10	23	11	16	8	120	12
Advertising	9	5	22	10	29	13	23	11	17	8	100	10
Marketing theory	10	5	17	8	13	6	22	11	7	3	69	7
Marketing strategy	6	3	7	3	5	2	7	3	2	1	27	3
Pricing	0	0	3	1	9	4	5	2	6	3	23	2
International marketing	1	1	1	0	4	2	3	1	9	4	18	2
Product/brand	0	0	2	1	5	2	3	1	6	3	16	2
Services marketing	0	0	0	0	4	2	3	1	1	0	8	1
Marketing ethics	3	2	1	0	1	0	1	0	2	1	8	1
Industrial/channels	2	1	1	0	0	0	0	0	0	0	3	0
Sales promotion	1	1	0	0	1	0	1	0	0	0	3	0
Legal issues	1	1	2	1	0	0	0	0	0	0	3	0
Marketing education	2	1	0	0	0	0	0	0	1	0	3	0
Relationship marketing	0	0	0	0	0	0	1	0	0	0	1	0
Internet marketing	0	0	0	0	0	0	0	0	1	0	1	0
Sales management	0	0	0	0	0	0	0	0	0	0	0	0
Retailing	0	0	0	0	0	0	0	0	0	0	0	0
Total	184	100	215	100	218	100	208	100	203	100	1028	100

Table 7. *Journal of Academy of Marketing Science Leading Topics.*

Article Primary Topic	1977–1981		1982–1986		1987–1991		1992–1996		1997–2002		1977–2002	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Consumer behavior	56	34	40	21	30	17	28	18	23	14	177	21
Marketing strategy	17	10	24	13	17	10	15	10	37	23	110	13
Marketing research	25	15	12	6	34	20	17	11	4	2	92	11
Industrial/channels	7	4	17	9	12	7	16	11	15	9	67	8
Sales management	10	6	8	4	18	10	13	9	15	9	64	8
International marketing	4	2	20	11	8	5	13	9	6	4	51	6
Retailing	12	7	22	12	7	4	6	4	4	2	51	6
Marketing theory	6	4	4	2	13	8	10	7	7	4	40	5
Advertising	9	5	14	7	8	5	7	5	0	0	38	5
Marketing ethics	3	2	5	3	11	6	6	4	6	4	31	4
Services marketing	2	1	6	3	6	3	10	7	6	4	30	4
Marketing education	8	5	6	3	5	3	0	0	1	1	20	2
Internet marketing	0	0	0	0	0	0	0	0	19	12	19	2
Pricing	1	1	3	2	3	2	3	2	4	2	14	2
Relationship marketing	0	0	0	0	0	0	8	5	5	3	13	2
Product/brand	2	1	2	1	0	0	0	0	7	4	11	1
Legal issues	2	1	4	2	0	0	0	0	1	1	7	1
Sales promotion	0	0	0	0	0	0	0	0	1	1	1	0
Total	164	100	187	100	172	100	152	100	161	100	836	100

advertising, research methods, and international marketing. *JAMS* has seen
a switch in focus between consumer behavior (falling from 34 to 14 percent
of output) and marketing strategy (rising from 10 to 23 percent of output)
with a large fall in the prominence of retailing (7 to 2 percent) and a rapid
rise of internet marketing (12 percent of articles during 1997–2002 from
none).

   Finally, a measure of citational impact is demonstrated in Fig. 3, which
presents a comparison over the 26-year period for all three journals using
the impact factor developed by the SSCI. The impact factor is a measure of
the frequency by which the average article in a particular journal has been
cited in a year across all of the journals tracked by SSCI. The mechanics is
that the impact factor is calculated by dividing the number of current
citations to articles published in the two previous years by the total number
of articles published in the two previous years. As an example, the impact
factor for *JM* for 2001 was 2.403. In order to calculate this, first the citations
appearing in 2001 for articles published in *JM* in both 2000 and 1999 are
determined. In 2001, there were 40 citations that appeared for *JM* articles
published in 2000, and there were 133 citations for *JM* articles published in
1999. There were 26 articles published in *JM* in 2000, and there were 46
articles published in 1999. As a result, the citations to recent articles (two
years back) would total 173 (40+133), while the number of recent articles
(two years back) would total 72 (26+46). The impact factor would therefore
be calculated by dividing 173 by 72, thereby producing the score of 2.403 for
JM for 2001. What is interesting to note is the upswing that has occurred
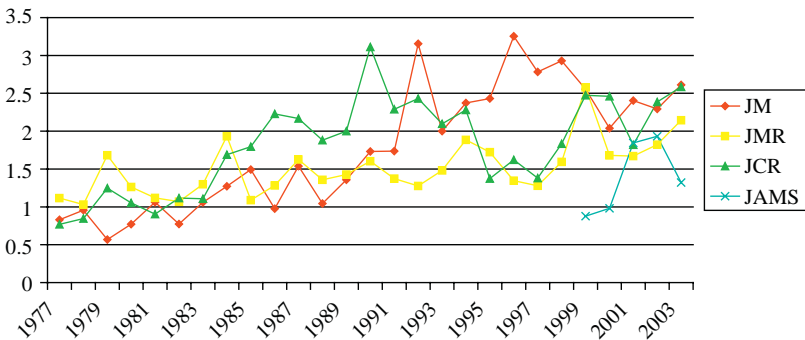over the 26-year period. Demonstrating its rapid rise in relevance, *JAMS*

Fig. 3. Social Science Citation Index Impact Factors for *Journal of Marketing,
Journal of Marketing Research*, *Journal of Consumer Research*, and *Journal of the
Academy of Marketing Science*, 1977–2003.

was added to the pool of journals for impact factor calculation in 1999. Its influence has quickly grown since inclusion as is readily visible in Fig. 3. The impact factor measurement is a clear reflection of the importance of the articles appearing in *JM*, *JMR*, *JCR*, and *JAMS* as influencers of current thought and practice.

DISCUSSION

This chapter has provided a comprehensive review of the scholarly inputs and outputs in the *JM*, *JMR*, *JCR*, and *JAMS*. Just under 4,500 articles were published by these four journals over 1977–2002 by an average of just over 1.75 authors each. The top author across all four was Morris Holbrook who was closely followed by Elizabeth Hirschman using an adjusted publication ranking. Other noteworthy individuals publishing across all four include Malhotra, Bagozzi, Hunt, Green, Lehmann, Bearden, Meyers-Levy, and Day. The University of Pennsylvania proved to be the top publishing institution with an adjusted score of just under 104 which was mainly for work published in *JM* and *JMR*. Other institutions particularly worthy of note across all four journals are Wisconsin, Columbia, Northwestern, Texas at Austin, NYC, Indiana, Texas A&M, Illinois, and the University of California, Los Angeles. Empirical articles as a share of output accounted for 70 to 94 percent of all articles by 1997–2002 for all four journals after a considerable rise in the proportion taken by *JM* in the last two benchmark periods 1987–2002 from a low of 52 percent over 1977–1981. Articles with managerial implications have taken an ever-increasing share of the total over the period, but considerable differences were found between *JCR* and the others. However, as noted by Holbrook (1995), basic research is crucial to the discipline even though immediate managerial relevance is not intuitively obvious and this is especially the case in relation to consumer behavior. In terms of topics the period has considerable changes in the coverage of consumer behavior topics between the four with falls among *JM*, *JMR*, and *JAMS* and a "U" shape rise at *JCR* over the four benchmark periods where the topic accounted for 65, 60, 57, and 67 percent of the total for a grand average of 61 percent over the whole period 1977–2002 (see Table 6). *JM* and *JMR* appear to be working toward a middle ground to some degree. The shift can be seen particular with *JMR* moving toward *JM* "territory" with marketing strategy topics accounting for 28 percent of *JMR's* total over 1997–2002, whereas marketing research fell to 24 percent from a high of just under 90 percent for the first benchmark

period (1977–1981). *JAMS* has most noticeably embraced internet marketing as a topic which accounted for 12 percent of articles over 1997–2002.

CONCLUSION AND FUTURE DIRECTION

Hopefully this chapter has provided an opportunity to recognize the historical and ongoing inputs and outputs of marketing research as represented in the work published by the *Journal of Marketing*, the *Journal of Marketing Research*, the *Journal of Consumer Research*, and the *Journal of the Academy of Marketing Science*. As well, it has been an aim to give a broad overview to the myriad of specific research programs represented in the discipline. Beyond the scope of the study lies the issue of the extent to which marketing's output makes a contribution to theory and practice. Burack (1999) offers two critical questions in this regard: ''1) Does the research anticipate emergent or future corporate needs which at best are only partially acknowledged by corporate officials and staff specialists? Then, 2) Does the research meet the *defined needs* of corporations regardless of whether these confront current issues (*action research*) or serve future requirements?'' (p. 26). However, this view must be balanced with the insight gained from cutting-edge theory building. To quote Calder and Tybout (1999):

> Few would dispute the premise that the pressure on business schools for relevance will increase. But does this mean that faculty must think of their research as the application of findings of effects and train their students accordingly? We think not. In our view, the path to greater relevance lies in the appreciation of the power of theory. (p. 364)

Clearly it behooves all involved in the field of marketing, academics, and practitioners alike to act as key opinion leaders to promote the realization that the generation and dissemination of marketing knowledge does indeed meet these defined needs head on. This review has highlighted throughout the increasing emphasis on empirical work and work positioned with managerial implications. A crucial component for knowledge transfer between academe and practitioners, which could not be captured in this study, is the mindset or readiness of the potential user to accept and internalize this knowledge (Glassman, 1999). Practitioners are, more than ever, facing increasing pressures to make quick *informed* decisions in volatile and dynamic market conditions (Osborn, 1999). Often the perception is that they are without the luxury of time to select, interpret, and digest applicable

information and insights that may be gleaned from the best journals (Glassman, 1999). It is to this paradox that the future challenge to the marketing profession lies.

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DYNAMIC STRATEGIC GOAL SETTING: THEORY AND INITIAL EVIDENCE

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ABSTRACT

We develop an integrative conceptualization of how firms set and alter strategic goals, incorporating insights from goal-setting literatures across the disciplines of marketing, management, and psychology. Our framework accounts for the internal and external forces that impact the content of a firm's goals as well as the dynamic processes by which these goals are formed and changed over time. By proposing this framework, we strive to offer insights into the "black box" of organizational goals that connect firm resources and environmental context to firm strategies. Illustrative data to support our framework are provided from a case study of a Fortune 100 communication firm's entry into an emerging, high-technology, new product marketplace.

INTRODUCTION

How do firms set and alter strategic goals? Consider the case of a Fortune 100 communications firm that faced a very serious erosion of its core

business. It was clear that the firm had to participate in new markets created by emerging technologies for consumer and business communication, especially in the area of online services (hereafter, OLS). A mandate for entering that market came down from top management:

> We are essentially trying to bring what our mission statement says. This whole world of the information superhighway and everything associated with it – we are trying to bring the right things to the market. The broader aim is solving customer needs ….

Although the mandate provided general direction to operating-level managers, significant disagreements hindered its fulfillment. World-class technology capabilities historically provided the firm a basis for sustainable advantage, and the brand stood for quality, particularly among established customers. Not surprisingly, some executives wanted to employ these in-house assets and take the time to develop proprietary technologies rather than acquire external assets. A unit vice president (VP) said:

> [Our firm] has more technology in this area than probably any company in the world. For us to go out and do an acquisition of [a competing product] as a condition of getting into the business – uh, I mean, I don't see why we have to buy our way into this. The internal capabilities *are* there.

Other executives looked at the market and saw that the firm significantly lagged competitors in the race to enter the market. Concerned about position, these executives argued that the firm's objective should be to acquire necessary technology and launch an entry quickly. A VP from a newly created OLS unit opined:

> We can't afford to take our time and develop everything to get there. That means you've got to buy/acquire strategic assets. The one driving force has got to be time-to-market.

Company strategy fragmented as one unit forged ahead with a technology acquisition, while another pursued the goal of internal development. With no unified market offering, the firm's OLS initiative floundered.

The preceding vignette illustrates that even though a firm's top management handed down a clear, overarching market entry goal (e.g., to enter the OLS market), executives charged with fulfilling this objective developed conflicting implementation-level goals based on individual considerations and inclinations. There appears to have been a divergence between ''official goals'' and the actual ''operative goals'' that subsequently directed the behavior of these executives.

So how *do* firms set and alter strategic goals? Consistent with Austin and Vancouver (1996) and Locke and Latham (1990), we define goals as ideals of future, desired end states. Goals are thought to direct attention, focus

effort, energize behavior, and provide motivation for action (Baumgartner & Pieters, 2008). Organizational goals provide a common end or unified purpose around which members' efforts can be centered. Indeed, prior research has provided substantial evidence at the individual, group, and organizational levels that goals relate positively to subsequent performance (Locke & Latham, 1990). Yet, although goals clearly seem to matter from a normative perspective, prior research sheds very little light on the multifaceted structure of organizational goals as well as the varied processes by which different types of goals are set and later modified in organizations. Some researchers emphasize firms' goals at the very abstract level of mission and strategic vision, while others consider goals at the concrete level of desired competencies (e.g., Prahalad & Hamel, 1990) or specific product-market strategies (Ratneshwar, Shocker, Cotte, & Srivastava, 1999). Nonetheless, few, if any, efforts have been made to provide an integrative view of firm goals, in particular, the microprocesses by which firm resources and abilities affect the setting of firm goals and, in turn, are shaped by those goals.

Insofar as goal-setting processes are concerned, as exemplified by the opening vignette, it appears that the various goals set in a firm can (1) vary in their origins or driving influences, (2) impact one another dynamically, and (3) offer conflicting strategic implications for the firm or business unit (BU; Anderson, 1982). Scholars, however, have usually emphasized only specific types of goal-setting processes, mostly in isolation. Classic strategy literature argues that top management determines and hands down the "goals of the enterprise," selects "courses of action," and will "allocate resources to accomplish these goals" (Chandler, 1962, p. 13). In contrast, researchers such as Hutt, Reingen, and Ronchetto (1988), Mintzberg (1987), and Quinn (1981) argue that goals emerge as a firm interacts with its environment (Chaffee, 1985). Others stress that strategic goals must be a function of unique resources that provide a basis for sustainable competitive advantage (Barney, 1991; Hunt & Morgan, 1995). Still, when it comes to *how* firms actually set and alter strategic goals, the literature lacks synthesis and a unified, comprehensive framework. Further, if the processes by which goals are set in firms are indeed dynamic and fraught with the peril of triggering intrafirm conflict, any new framework needs to capture the richness of the processes and to delineate the potential facilitating and debilitating effects of each goal-setting process on a firm's achievement of its goal-directed pursuits.

There are two important reasons that make this an opportune time to draw the attention of the marketing discipline to organizational goal setting.

First, much of the prior research focused on goal setting appears in management journals; however, there is a range of current topics of central interest to marketing scholars that reveal the need for a better understanding of the formation and evaluation of organizational goals from a marketing perspective. For example, goals regarding market entry and positioning (Debruyne & Reibstein, 2005; Ofek & Turut, 2008) are often crafted through negotiation within the strategic planning processes of the firm or emerge from improvisational activities; yet, such goals are critical for firm performance outcomes (Slotegraaf & Dickson, 2004). More specifically, firm performance is directly impacted by behaviors that issue from marketing-relevant goals (e.g., goals pertaining to the speed-to-market of a new innovation (Fang, 2008), building or acquiring a new product platform (John, Weiss, & Dutta, 1999; Kim, Wong, & Eng, 2003), pursuing acquisition versus in-house development of marketing and other capabilities (Dutta, Om, & Surendra, 1999; Krasnikov & Jayachandran, 2008; Moorman & Slotegraaf, 1999), and responding purposefully to competitor actions (Debruyne & Reibstein, 2005; Homburg, Grozdanovic, & Klarmann, 2007).

Second, the increased levels of dynamic change evident in the current market environments across industries (Moorman & Miner, 1998) suggest the need for an integrative study of organizational goal setting. We need a better understanding of how organizations establish goals quickly and continually modify them and, in turn, the ultimate effect these processes have on performance outcomes. Whether in response to *external* factors, such as competitive intensity/density (Voss & Voss, 2008), technological turbulence (Zhou, Yim, & Tse, 2005), or changing customer tastes (Homburg et al., 2007), or due to factors that are *internal* to the firm, such as a decision to pursue a market-oriented strategy (Gebhardt, Carpenter, & Sherry, 2006) or to align subgroup goals (Ketokivi & Castaner, 2004), goal setting and modification are key strategic issues facing the contemporary marketing manager.

This chapter aims to (1) provide a review of the literatures that address organizational goal setting, (2) examine the specific approaches for goal setting that are identified by academic research and offer an integrative conceptual framework to organize and extend this literature, and (3) provide illustrative empirical evidence that sheds light on the degree to which our conceptualization aligns with how goals are set and modified within an organization.

More specifically, we offer a detailed examination of goal-setting processes within the context of an integrative behavioral view of the firm (cf. Cyert & March, 1963), shedding light on the microprocesses by which resources

become intertwined with managerial processes to shape the strategic efforts that propel the growth of the firm (Argote & Greve, 2007; Penrose, 1959). To identify relevant processes and contextual factors, we build on prior research drawn from multiple disciplines including marketing, strategy, organizational behavior, economics, and cognitive and social psychology. We propose a three-level, hierarchical view of the firm's goals; these levels encompass the "being," "doing," and "having" aspects of the firm (Sartre, 1943/1956). We suggest that from a means-end perspective (Simon, 1997), firms acquire assets and capabilities ("having") with the intent to deploy them in strategic ways ("doing") that will lead to positions of competitive advantage, wealth generation for shareholders, and the fulfillment of firm values and desired self-identity ("being").

Further, we argue that three distinct types of processes (mandating, leveraging, adapting) describe how these three levels of goals in a firm interrelate and interact with one another. Collectively, these three processes determine how goals are set, validated, and altered in an organization, subject to the ever-evolving constraints of who the firm is (being-level), what it does (doing-level), and what it has (having-level). Together, the hierarchical levels and associated processes allow scholars to capture the complexity of the rich contexts (Weick, 2007) in which organizational goals are formed over time (Gavetti & Rivkin, 2007).

This chapter is organized as follows. First, we describe the theoretical foundations of our work and propose a hierarchical framework of the firm as a goal-directed, purposeful entity. Next, we integrate prior literature and offer a process model that explains how firms set and modify goals. Two propositions are developed from our framework and our process model. We then examine dynamic goal determination processes that operate within the proposed framework and provide illustrative evidence (Siggelkow, 2007) of the applicability and usefulness of our approach with data from depth interviews of 41 executives from a Fortune 100 firm who were responsible for setting market entry goals. A third proposition emerges from our findings in an inductive manner. We conclude by highlighting our contributions, and by noting limitations and directions for future research.

THEORETICAL FOUNDATIONS: PURPOSEFUL BEHAVIOR IN FIRMS

Many researchers emphasize that the firm is a complex social institution, engaged in purposive and goal-directed behavior. Nickerson and Zenger (2004)

argue that selecting and solving appropriate problems is key to a firm's ability to generate new knowledge and capabilities for competitive advantage. Dickson (1992) points out that competitive rationality in a firm's decisions requires alertness in perceiving changes in the market environment as well as the ability to make and implement decisions rapidly. In evolving product markets, Ratneshwar et al. (1999) and Rosa, Porac, Runser-Spanjol, and Saxon (1999) stress the critical role of adaptive and purposive behaviors on the part of the firm.

An underlying, often unstated, assumption in both resource-based theories of the firm (Barney, 1991) and knowledge-based views of the firm (Grant, 1996; Nickerson & Zenger, 2004) is the notion of strategy as a set of goal-directed decisions and behaviors that unfold over time (see, e.g., Hutt et al., 1988; Quinn, 1981). It follows that if managers have a better understanding of the goals and motivations that drive firm behaviors and of the processes by which firms alter goals in a dynamic competitive environment, they should be better able to develop and implement firm strategies.

Understanding how firms set and alter goals requires a dynamic process perspective for several reasons. First, managers' decisions regarding organizational goals and the strategies to reach those goals are impacted by their interpretations of past and present events (Weick, 2007), including progress toward achieving a focal goal in light of other goals that might have been chosen (Fishbach & Dhar, 2005; Fried & Slowik, 2004), and expectations of future events (Zhang, Fishbach, & Dhar, 2007). Studies of brand extensions and risky choices show that human perceptions, appraisals, and intentions are affected by salient goals (Chernev, 2004; Martin & Stewart, 2001; Martin, Stewart, & Matta, 2005). Thus, one must examine antecedents and expected (desired) consequences to fully understand goal setting. Second, organizations exist in increasingly turbulent environments that require flexible goals (Eisenhardt & Sull, 2001). Consequently, in many firms, goals are set and altered continually (Novemsky & Dhar, 2005), a notion somewhat at odds with traditional views of strategy (Burgelman, 1983). For example, Gebhardt et al. (2006) demonstrate the iterative processes through which goals are developed as firms strive to create market-oriented cultures.

Adaptive and purposive behaviors by firms imply thought and goal-directed decision-making. But do *firms* think? Scholars tread precariously between analogy and metaphysics when describing an organization's "collective mind" (Daft & Weick, 1984). However, a rich literature on organizational learning and cognition makes it clear that firms, in general, and management teams, in particular, do draw from shared organizational

memories (Walsh, 1995) that contain evolving knowledge (Dougherty, 1992; Moorman & Miner, 1998). This shared knowledge enables managers to interrelate heedfully to make decisions of consequence to the organization (Brandon & Hollingshead, 2004; Weick & Roberts, 1993).

We therefore assume that individuals within a firm interact to share beliefs and to lobby for preferred goals (Anderson, 1982). In addition, conflicting goals will likely exist because of the strategic contradictions between exploring new directions and exploiting existing resources and market positions (Mizik & Jacobson, 2003; Smith & Tushman, 2005). Conflicts are also expected as certain goals naturally align more closely with outcomes that favor certain individuals or subgroups (Ketokivi & Castaner, 2004). Such conflicts can be exacerbated by social network effects that impact the perspectives of individuals and subgroups (Burt, 1992), resulting in unique "thought worlds" within groups across the organization (Dougherty, 1992). Through the arbitrage of power and knowledge accomplished through political interactions, strategy makers from these subgroups influence the goals (ends) and actions (means) ultimately selected and pursued by the firm (Narayanan & Fahey, 1982; Walsh & Fahey, 1986).

AN INTEGRATIVE VIEW OF A FIRM'S GOAL STRUCTURE: A HIERARCHICAL FRAMEWORK

The goals of a firm can be conceptualized in terms of a hierarchy of means-end chains wherein lower-order ends serve as means to accomplishing higher-order ends (see Simon, 1997). Further, in accord with Allen and Starr (1982), we view discrete levels of goals as integral to a hierarchical system, although such conceptualization must be considered to some extent as simply a matter of epistemological convenience. Therefore, a hierarchical framework with discrete levels for describing a firm's goals is developed here as the context for a more detailed subsequent examination of a firm's goal-setting processes. The framework (see Fig. 1) is built on the following assumptions:

- The goals that drive strategic choices constitute three levels of a hierarchy: *what the firm wants to be, what the firm wants to do*, and *what the firm wants to have* (Cantor, 1990; Huffman, Ratneshwar, & Mick, 2000; Kleine, Kleine, & Kernan, 1993; Simon, 1997).
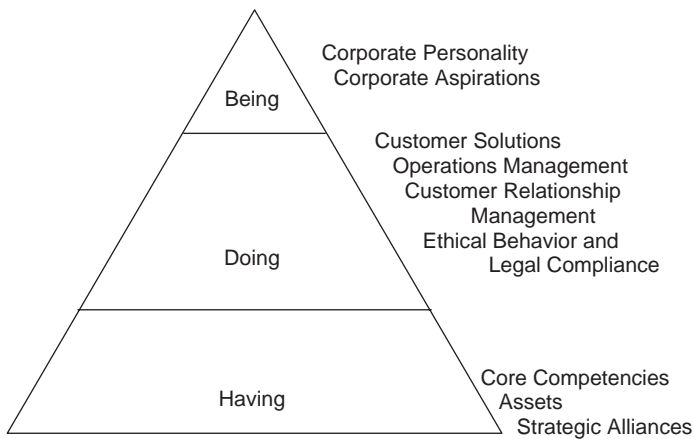
Fig. 1. A Hierarchical View of Firms' Goals.

- The three levels of the goal structure are interrelated in that goals of *having* are critical for accomplishing goals of *doing*, and goals of *doing* facilitate the achievement of goals of *being*.
- Although lower-order goals are normally influenced by higher-order goals, the direction of influence can reverse in certain situations.
- Goals are inherently dynamic. When goals change and evolve at one level, they will impact related goals at other levels (Bagozzi & Dholakia, 1999).

Being-Level Goals

The being-level represents the highest level of goals in the framework. Firm goals at this level are more abstract or general than doing- and having-level goals, and they usually require more effort and time to change than lower-order goals. These goals help define what the firm strives to be, what the firm is perceived to be, and the reason(s) for its existence. Consequently, goals at this level define boundaries for the firm's identity and performance that might confirm or disconfirm stakeholders' (e.g., employees, customers, shareholders, alliance members) decisions to maintain their association with the firm at any given time.

In the present framework, the being-level is composed of *corporate personality* and *corporate aspirations*. *Corporate personality* is the behavioral manifestation of the firm's corporate culture and the values of its leaders

(Berens & Van Riel, 2004). It is likely, as suggested by research on organization image and identity, that there will be a divergence between self-perceived and ideal/desired personality (Brown, Dacin, Pratt, & Whetton, 2006; Dutton, Dukerich, & Harquail, 1994). Invented, discovered, or developed iteratively, corporate culture is a "pattern of shared values and beliefs that … provide norms for behavior in the organization" (Deshpande & Webster, 1989, p. 4). Leadership values within the firm, explicit and implicit, contribute to the culture as well as drive goal-setting processes (Canella & Monroe, 1997), such as decisions regarding the pursuit of innovation outcomes (Yadav, Prabhu, & Chandy, 2007). Values impacting or resulting from key decision-makers' experience and personality have direct influence on the behavior of the firm and how the firm is perceived externally (Dickson, 1992). Further, for both culture and values, there is empirical evidence that managers within firms distinguish between existing and desired states (O'Reilly, Chatman, & Caldwell, 1991), suggesting a goal-directed motivation to move toward the desired culture and values (such as transforming to a market-oriented culture; Gebhardt et al., 2006).

Corporate aspirations are defined by the firm's mission and vision. The corporate mission establishes a sense of purpose, identity, and commitment to the strategic business definition of the firm. Further purported by the mission are the values that are associated with the firm, the enduring beliefs about preferable modes of conduct the firm strives to achieve and maintain (Kreitner & Kinicki, 1995). Articulating the nature of the business of the firm and its future intentions, the corporate vision is based on the collective managerial beliefs about how the environment will unfold, and what the business can expect in the future (Day, 1990). Central to the aspirations of the for-profit firm are desires for profitability and growth (Rappaport, 1986; Srivastava, Shervani, & Fahey, 1998), although firms also hold other goals that are not necessarily in conflict with financial goals (e.g., social responsibility; Luo & Bhattacharya, 2006). The market rewards firms that are wealth creators; thus, management teams aspire toward this goal.

Doing-Level Goals

The doing-level represents the middle level in the framework. Goals at this level are less abstract than being-level goals but more abstract than having-level goals, and provide meaning and organization to the everyday activities of the firm (Huffman et al., 2000). For example, fulfillment of being-level

aspirations of profitability and growth may engender doing-level goals regarding cash flow improvements (amount, timing, certainty) via upgraded customer service and other value enhancements (Srivastava, Shervani, & Fahey, 1999). Thus, firms should select specific doing-level goals that are perceived to help achieve being-level goals. What the firm is currently doing may impact and constrain both goals and activities within this level, as well as those at other levels of the hierarchy.

In our framework, we follow Srivastava et al. (1999) and argue that the doing-level is primarily composed of goals related to *customer solutions*, *operations management* (including processes for transforming inputs into solutions), *customer relationship management* (CRM), and *ethical behavior*. *Customer solutions* goals involve the development of products and services (alone or in bundles) that address customer needs and wants and, thus, offer value to the customer (Tuli, Kohli, & Bharadwaj, 2007; Vargo & Lusch, 2004). This category would include market entry goals (Galunic & Eisenhardt, 1996). *Operations management* and input transformation goals refer to processes for effective and efficient transformation of physical and informational inputs into customer solutions (Srivastava et al., 1999). Doing-level goals in this category can also pertain to cost management goals, building and maintaining relationships with value chain partners, and make-or-buy goals, including decisions similar to those highlighted in our opening vignette (Kogut & Zander, 1996). *CRM* involves goals regarding building, maintaining, and leveraging relationships with the ''right'' customers (Boulding, Staelin, Ehret, & Johnston, 2005), including goals for customer satisfaction, retention, and payoff. *Ethical and/or legally compliant behavior* includes goals for employees to conduct themselves in ways that are, at a minimum, compliant with legal standards (e.g., Sarbanes–Oxley), although they can also entail circumventing the intent of such regulations (Goldman & Slezak, 2006). Some organizations may also have goals related to ethical standards that are perceived to make the firm more attractive to customers and employees (Altman, 2005; Simmons & Becker-Olsen, 2006).

Having-Level Goals

Having-level goals represent the lowest and most tangible level in our framework, and thus are typically less abstract than both doing- and being-level goals. Goals at this level refer to resources (e.g., assets and capabilities) that the firm would like to have, and the hierarchical nature of our

framework suggests that such goals are guided by managers' perceptions of the means needed to fulfill doing-level goals (Gavetti, 2005) and, thus, achieve desired outcomes, such as a position of competitive advantage (Vorhies & Morgan, 2005). For example, a doing-level goal of improving relationships with customers might create a having-level goal of acquiring a CRM product. Mizik and Jacobson (2003) examine the performance outcomes of whether a firm's strategic emphasis (i.e., goal-directed behavior) is on developing additional resources or on deploying existing resources to win in the marketplace. The having-level also defines what the firm has or owns today. What the firm currently owns impacts (constrains) goals and actions at this level and other levels of the hierarchy. For example, having-level goals can be addressed through two types of doing-level actions: investing resources to develop desired assets internally or searching the market for alliance or acquisition targets (Vanhaverbeke, Duysters, & Noorderhaven, 2002). This hierarchical interaction, an example of a goal-setting microprocess that is inherent in the resource-based view of the firm, will be illustrated more fully in later sections.

In our framework, having-level goals are composed of *core competencies, assets*, and *strategic alliances and relationships*. *Core competency* goals relate to the firm's objectives regarding desirable knowledge, skills, and abilities within the firm. A core competency (e.g., a technology skill) is one that provides potential access to a variety of markets and makes a significant contribution to perceived customer benefits; it should also be difficult for competitors to imitate (Prahalad & Hamel, 1990). Competencies in the current context include capability goals such as the development of marketing expertise and firm-specific technical prowess (e.g., Dutta et al., 1999; Krashnikov & Jayachandran, 2008). Firm *asset* goals relate to the financial, human, physical, and information assets a firm wants to possess. Human asset goals denote the desired characteristics (e.g., training, experience, judgment, personalities) of the workforce (Barney, 1991; Griffith & Lusch, 2007). Desired technology used in the firm, plant and equipment, geographic location, and access to raw materials are all examples of physical asset goals (Barney, 1991). Finally, information asset goals are typically comprised of databases of customer, supply chain, or other market information. They determine the type of information a firm pursues (Moorman, 1995). *Strategic alliances* and relationship goals direct firm efforts to develop ties that are perceived to be beneficial to the pursuit of strategic goals (Gulati, 1998; Rindfleisch & Moorman, 2001). Alliances can be critical sources of capabilities and other assets, but can also be valuable in their own right in terms of linkages to customers or competitors in the

marketplace (Luo, Rindfleisch, & Tse, 2007). For example, Srivastava et al. (1999) argue that the creation and leveraging of relationships with channel partners and end-users are critical assets in creating shareholder value.

Our first proposition captures the fundamental concepts embedded in this framework:

P1. (a) Organizational goals are hierarchical in nature such that all goals come under one of the three distinct levels in a hierarchy, namely being, doing, and having; and (b) goals at lower levels both impact and are impacted by goals at higher levels.

HOW FIRMS SET GOALS: A PROCESS MODEL

The framework presented in the preceding section explicates the notion of a hierarchy of goals that both defines the firm and explains its strategic behaviors. Next, we propose a model that describes the three distinctly different processes involved in the formation and alteration of strategic goals (see Fig. 2). Our intent is to capture the primary ways in which goals at different levels of the hierarchy interact and influence one another (being→doing→having, or having→doing→being), as they are being shaped simultaneously by the environmental context in which the firm is situated. In our framework, we assume that (1) strategy development in any firm requires the integration and alignment of multiple goals with the aim of securing a competitive advantage and, in turn, increased shareholder wealth (Grant, 1996; Srivastava et al., 1999) and (2) goal setting and strategy development may be deliberate, emergent, or both, varying over time (Gavetti & Rivkin, 2007; Mintzberg, 1987).

Goals at different levels in the hierarchy can interact with each other in two distinct ways. First, as suggested by theories of how performance is influenced by the CEO, top management skills, and corporate mission statements (Dickson, 2003; Homburg, Krohmer, & Workman, 1999), higher-level goals in a firm guide and give meaning to goals at lower levels (Chandler, 1962). We refer to this top-down approach to goal formation as *mandating*. In our framework, being-level goals can mandate doing-level goals which can, in turn, mandate having-level goals. However, goals that emerge from lower levels of a hierarchy may also influence higher-level goals as the former become institutionalized over time (Galunic & Rodan, 1998). In other words, in the terminology of our framework, having-level goals can shape doing-level goals, and doing-level goals can alter being-level goals.
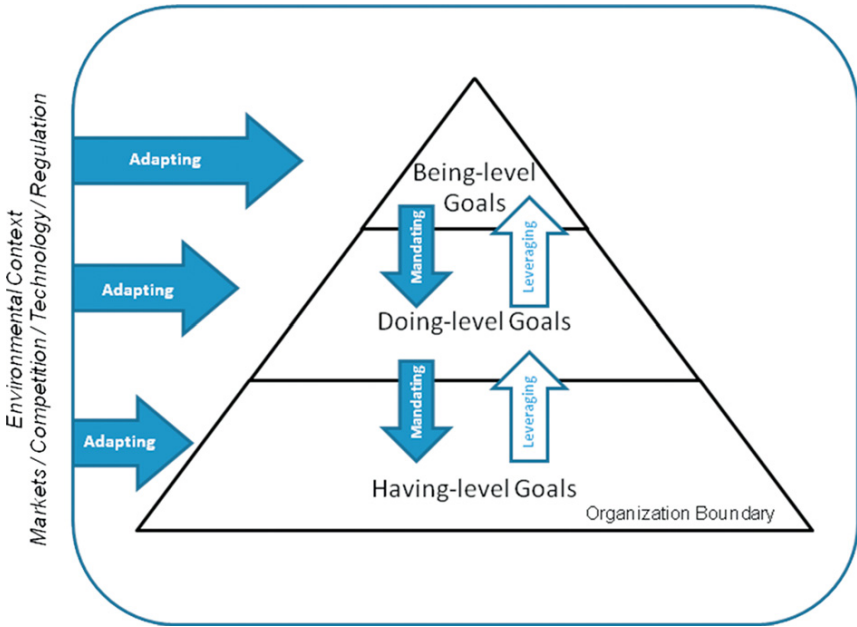
Fig. 2. How Firms Set Goals: A Process Model.

For example, Dosi and Marengo (2007, p. 493) note that firms, over time, develop "specific problem solving competencies associated with their own operational procedures and routines, which in turn are embedded in the patterns of intraorganizational division of labor and assignments of decision entitlements. Through problem solving, firms generate their productive knowledge and shape their organizational structure." We call this bottom-up process of goal formation *leveraging*. The third main process of goal setting is *adapting*. Organizational goals developed through adapting are shaped by contextual factors, such as the political environment, industry regulations, consumer preferences, competitor actions, and other external forces, rather than by other goals. The resource dependence model (Pfeffer & Salancik, 1978) and the constituency-based model of the firm (Anderson, 1982) provide examples of strategic goals that are formed through adaptation to external factors, and empirical evidence exists that demonstrates the impact on performance outcomes of adaptation to customer and competitor contingencies (Homburg et al., 2007). Goals at all three levels of our hierarchical framework can be impacted by these adaptations to the environment. Next, we elaborate the three goal-setting processes.

Mandating

The top-down process wherein lower-level goals are shaped by higher-level goals is referred to as mandating. Mandating helps a firm to achieve alignment and coherence in the goal structure throughout the organization (Spender, 1996). Similarly, the need to be seen by the financial markets as a creator of wealth for shareholders can motivate effectiveness and efficiency in firm behaviors at all levels (Srivastava et al., 1999). Thus, being-level characteristics determine what a firm decides to do; being is a prefix for doing. Doing, in turn, dictates what resources and relationships the firm must have to accomplish these higher-level goals.

Mandating, beyond influencing goals through the legitimate authority of top managers, can affect goal-setting processes and outcomes in a firm by providing a sense of central characteristics and distinctiveness for the firm. For example, by imposing values and expectations on the firm, mandating affects social learning by constraining how individuals coordinate their processes, activities, and decision-making (Kogut & Zander, 1996), and directs firm attention toward environmental contingencies that are relevant to those values and expectations (e.g., new technologies; Yadav et al., 2007). Mandating also establishes higher-order priorities and principles that establish the context of discourse and coordination among individuals with differing areas of expertise (Weinzimmer, Bond, Houston, & Nystrom, 2003) and foster a sense of shared identity (Kogut & Zander, 1996). By influencing identity and by directing attention, mandating has an effect on goals formed within an organization.

Although perhaps the most traditional form of formal goal-setting, top-down approaches to goal formation generally focus on the long term and often tend to assume relatively static goal structures and environmental conditions. Thus, they provide few insights into how contextual changes influence (or should influence) firm goals (Chaffee, 1985).

Leveraging

The bottom-up process of goal formation wherein higher-level goals are shaped by lower-level goals is referred to as leveraging. It reflects a desire (purposive or passive) to harness and exploit existing resources and strategies. Like mandating, leveraging helps the firm to achieve alignment in the goal structure throughout the organization. But in contrast to mandating, the process is usually much less deliberate; leveraging tends to be more

emergent and incremental (Hutt et al., 1988). Also, as opposed to the reliance on upper management that is inherent in mandating, leveraging assumes that strategic goals are an organization-wide responsibility (Chaffee, 1985).

Literature from both marketing and management provides support for leveraging as a key process for goal setting. For example, central to the resource-based view is the notion that a firm's opportunities are largely determined by its existing resources (Hunt & Morgan, 1995). Upper management works within the framework provided by these resources in that their interests, abilities, and objectives are conditioned by the resources available (Penrose, 1959). There may be many instances where it is beneficial to allow goals to develop gradually through organizational actions and experiences (Mintzberg, 1987; Spender, 1996).

Studies in managerial and organization cognition also indicate that differing objectives can be generated by different units within an organization because of differing "thought worlds" (Dougherty, 1992). That is, a manager's perceptions are greatly influenced by his or her training and sphere of experience, and these perceptions, in turn, direct his or her attention to different aspects of the internal environment (e.g., firm assets or capabilities) and external environment (e.g., competitor actions, environmental changes; Walsh & Fahey, 1986). To the degree that a manager champions his or her views to organizational leadership (Ketokivi & Castaner, 2004), either through political activity (Anderson, 1982) or through the use of formal power or influence (Narayanan & Fahey, 1982), the firm's strategic goals can be influenced by beliefs that emerge from lower levels within the organization hierarchy (Dutton et al., 1994).

Adapting

In contrast to mandating and leveraging, adapting describes strategic goals initiated in response to perceived changes in the external environment (Chaffee, 1985; White, Varadarajan, & Dacin, 2003). Adaptive goals are central to Eisenhardt and Sull's (2001) prescription that firms operating in dynamic environments must be willing to continually launch small strategic probes in order to learn about what approaches will or will not work in a given context. Additional resources can then be diverted to probes that show initial promise, and adjustments can be made based on new understandings of contextual changes (Wang & Zhang, 2008). Thus, adapting refers to the process whereby goals are shaped by contextual factors at any or all levels of the hierarchy (Dickson, 1992; Ratneshwar et al., 1999). Environmental

forces that shape firm goals include market entries by competitors, macroeconomic factors, resource prices, market/customer trends, government regulations, and technological changes.

The literature provides ample evidence of adapting in goal formation and modification. For example, Spender (1996) and Kogut and Zander (1996) discuss adaptation from an evolutionary perspective, with an emphasis on purposeful behavior directed toward the survival of the organization. Further, organizational structures themselves can evolve on account of adaptive forces. "Adhocracies" may emerge to facilitate the rapid crafting of goals and objectives in fast-changing environments, or a network-style organization structure may be created to open up the firm to the formation of strategic relationships with external partners (Bond, Houston, & Tang, 2008; Løwendahl & Revang, 1998). Further, Kabadayi, Eyuboglu, and Thomas (2007) detail how firms can restructure their distribution channels to adapt to environmental contingencies.

Adaptive capabilities may be central to a firm's potential for developing a competitive advantage. For example, a firm may create an inimitable advantage if it is able to reorganize assets (having-level) dynamically in response to changes in customer preferences or actions by competitors, particularly in complex industries (Dickson, 1992; Homburg et al., 2007; Løwendahl & Revang, 1998). However, such a reorganization is predicated upon understanding the direction and magnitude of the environmental changes, as well as how the firm's own actions will subsequently change the external environment (Dickson, 1992). Recent evidence suggests that the performance of frontline employees often suffers during changes to a firm's strategy for pursuing competitive advantage, so being able to adapt is a skill that can vary across organizations (Ye, Marinova, & Singh, 2007). Also in the context of turbulent environments, Moorman and Miner (1998) highlight the strategic value of innovation. A firm culture (being-level) that is open to experimentation (doing-level) may be more adept at adaptive strategies that create competitive advantages through asset recombinations (Galunic & Rodan, 1998).

Our second proposition captures the microprocesses underlying organizational goal setting and ongoing goal modification:

P2. (a) The microprocesses by which organizations set and alter goals can be organized under the typology of mandating, leveraging, and adapting and (b) the three types of microprocesses work simultaneously and in conjunction to dynamically link firm resources and environmental context to firm strategies.

ILLUSTRATIVE EMPIRICAL EVIDENCE

Overview of Exploratory Study

Although our hierarchical framework of a firm's goal structure and our process model of goal formation both have strong foundations in the extant literature, research specific to the goal-setting processes within the firm and supporting empirical evidence of the full model is lacking. Given the sparse literature specific to our propositions, an exploratory case study approach for gaining insights into relevant goal-setting and modification micro-processes seems appropriate (Eisenhardt & Graebner, 2007). Here we expand the case study of the Fortune 100 firm introduced in the opening vignette.

We conducted depth interviews to explore the goal-setting beliefs of 41 senior executives involved in launching a new unit within the firm to enter the new market. The data provide initial evidence of the goal determination processes depicted in our model. Although qualitative techniques typically are not used to provide rigorous tests of well-defined, established theories, these deep-probing approaches are particularly well suited for developing an understanding of complex phenomena and developing new theories (Glaser & Strauss, 1967; Weick, 2007). Scholars have used depth, qualitative approaches to investigate many marketing strategy and organizational process issues, including marketing's role in the firm (Webster, Malter, & Ganesan, 2005; Workman, 1993), solutions-marketing strategies (Tuli et al., 2007), creating a market orientation (Gebhardt et al., 2006), strategic decision-making in turbulent environments (Eisenhardt, 1989), organizational emergence (Chiles, Meyer, & Hench, 2004), cross-functional barriers to collaboration (Dougherty, 1992), managers' social judgment processes (Elsbach & Kramer, 2003), and intrafirm competition (Galunic & Eisenhardt, 1996).

At the time of our data collection, the focal organization (a highly reputed, tradition-bound telecommunications firm) was attempting to enter a new, fast-moving, unstructured, and poorly understood market for Internet-based OLS. Depth interviews were conducted with senior executives across four involved BUs of the firm during the crucial early few months in the strategy formation effort. The units were a newly formed *OLS unit*, the *core services unit* (i.e., the unit that provided the firm's traditional products and services), a *competitive unit* (i.e., one that offered products and services that competed with the OLS unit for customers in the market), and a *neutral unit* (i.e., one that provided services, but did not compete

in the market against the OLS unit). Within each BU, we interviewed presidents, all relevant VPs, and key unit managers. We also interviewed the corporate CFO, CIO, and public relations (PR) officer. The interviews, 22 conducted in person and 19 by telephone, averaged one hour in length, and were tape recorded and transcribed verbatim. Each interview began by asking respondents to describe their involvement in the firm's nascent OLS initiative, their views regarding goals for the effort, and their opinion of the firm's potential competitive advantages in OLS. This discussion was followed by a series of questions regarding each respondent's evaluation of the existing goals for the current online effort and the degree to which each respondent personally agreed with those goals. In light of these goals, we asked for respondents' opinion regarding the strategic significance of the goal of entering the OLS market, in general. Finally, we asked them to share any critical issues and success factors that they believed hindered or facilitated the achievement of the goals of the firm's OLS initiative. We used set questions to ensure consistency (McCracken, 1988), but probed to encourage respondents to clarify goals and beliefs.

During the data collection period, the OLS market had not yet evolved to the point of having well-defined standards for service delivery, content demanded by customers, technical capabilities, or an established competitive landscape. As is common in the formation process of a new product market, most technical, competitive, and customer factors were in flux (Rosa et al., 1999). At the same time, the focal firm had just created a new OLS BU, drawing resources from the other three involved units, to structure and lead the firm's entry into the OLS market. This approach was controversial in the views of the existing units. Months after our interviews, the OLS unit was disbanded and its resources and goals were reassigned. The firm never achieved the target level of market prominence envisioned by top management.

Data Analysis

The data were analyzed in an iterative process of going back and forth between carefully reading the transcripts and considering our theory-driven framework. Although the primary intention was in examining whether the data verified the theory in a deductive manner, modifications were also made to the emerging theory through induction (Chiles et al., 2004;

Elsbach & Kramer, 2003; Langley, 1999). These iterative processes were utilized across four stages of data analysis:

Stage 1: We began by reading the 41 verbatim interview transcripts and identifying quotations that pertained to goal setting. In total, 206 unique statements were elicited.

Stage 2: Given our interest in goal-setting processes and our prior immersion in the goal-setting literature, we utilized ''master codes'' (cf. Chiles et al., 2004; Miles & Huberman, 1994) to link specific quotes to the broad conceptual categories of being-, doing-, and having-level goals, consistent with the definitions of these terms presented in our framework. Being-level goals were those statements that reflected intentions or efforts to move toward desired end states regarding the identity and purpose of the organization. Statements were coded as doing-level goals when intended actions were the focus. Finally, quotes that reflected goals related to the acquisition of resources were labeled having-level. Given the simple, three-category task, interrater reliability between two independent coders was high (94%). The few disagreements were resolved by discussion.

Stage 3: From the more general master codes, we reexamined each quotation and assigned it a subcode that denoted the goal-setting process that appeared to be at work. A statement was coded as mandating if the goal appeared to be driven by top-down direction within the firm's hierarchy. Leveraging was the label given to goals that were judged to result from the desire to continue current strategies or to deploy assets or resources already possessed by the firm. Finally, goals that seemed to emerge in response to changes in the external environment were coded adapting. Again, there were few, but highly distinct categories, resulting in high interrater reliability (92%).

Stage 4: Finally, we examined all of the goal statements in context by rereading them in relation to surrounding transcription text. Although the three levels of goals and the three goal-setting processes came from theory and our analysis was thus deductive in nature, the raters induced from the transcripts that the goals were rarely independent. The pursuit or accomplishment of one goal might also help or hinder the pursuit or accomplishment of another goal. Thus, we assigned two additional subcodes. First, we coded whether the goal was independent, based on whether it influenced another goal (interrater reliability $= 87\%$). Second, for the goals that were related to other goals, we judged whether or not the

influence was facilitating (i.e., aiding the attainment of another goal) or debilitating (i.e., hindering the attainment of another goal) (interrater reliability = 96%).

FINDINGS

From the viewpoint of our framework, the firm's primary being-level goals included generating shareholder wealth, maintaining its public image as a full-service communication provider, and sustaining its image as an innovation leader. Its doing-level goals included maintaining and supporting its cash cow consumer services business, launching new businesses that would support the cash cow while generating additional revenues, and engaging in initiatives that fulfilled its public and self-image. Its having-level goals included maintaining a strong brand, huge customer base, a top-flight R&D operation, and customer management skills, while adding new technical skills, complementary services, and new partners.

From a goal-setting process perspective, the data from the depth interviews provided strong evidence that the firm's higher-level goals impacted its lower-level goals (mandating), just as its assets, capabilities, and current strategies impacted higher-level goals (leveraging). Further, the firm was forced to modify its goals in the light of environmental factors, both regulatory and competitive (adapting). In addition, the goals generated by mandating and leveraging often conflicted with goals that emerged from adaptation. In the following sections, we present evidence from our data of the three goal-setting processes as well as the complicated interplay among them (see also Bagozzi & Dholakia, 1999).

Mandating

We found considerable empirical evidence to support our expectation that mandating processes would occur. In our data, the primary top-down influence originated from being-level goals that were related to firm image (Dutton et al., 1994). These higher-order goals appeared to drive a number of doing-level goals regarding matters such as market-entry approaches (Galunic & Eisenhardt, 1996). In turn, there was also evidence of doing-level goals influencing having-level goals.

Evidence From the OLS Context: Being→Doing

The desire to enter the OLS market was seen as critical to fulfilling the firm's identity as a full-service communications provider (see quote from the core unit president in the section "Introduction"). The firm's core (largest) service was still seen as providing the main benefit to the firm's large installed customer base, and OLS was perceived to be an add-on service that might potentially help lock-in the customer to the firm. Thus, OLS market entry activities (Galunic & Eisenhardt, 1996) represented doing-level goals that helped fulfill being-level goals in a hierarchical manner (Huffman et al., 2000; Simon, 1997).

Another aspect of the firm's identity was that of a technology leader. The firm had a rich heritage of basic science discoveries that were generated by its world-famous research centers and commercialized by its market units. Consequently, entering the OLS market was viewed by some as an important means to "live up" to this identity goal. This again illustrates how OLS activities represented doing-level goals that were put in place to attain being-level goals.

> I think the legacy that we have here is a psychological legacy ... organizational genetics. We're supposed to be leading edge. That's a given .... (BU VP, OLS unit)

Corporate aspirations had a similar impact on doing-level goals. The OLS market was just becoming large enough to be seen as material to the firm's future financial performance. Prior to this study the firm did not enter the market because, according to the OLS unit president, "it just wasn't big enough for a big company." However, as the market evolved, being-level goals to be seen as a creator of shareholder value created doing-level pressures to pay off and produce positive cash flow quickly (Rappaport, 1986).

> [Within this corporation] if you don't get a start-up off the ground, there isn't a 'year down the road.' They'll disband it and do something else. (BU Manager, OLS unit)

Similarly, the core unit president had strong opinions. His views were shaped by the fact that his unit, as the firm's primary source of revenue, was seen as a cash cow by many; consequently, he dealt constantly with investment requests from other units across the firm. Given his clear focus on the being-level goal of creating shareholder value, he hated to subsidize efforts that did not pay off in the market.

> People are not focused enough on customers, and are not focused enough on creating shareowner value. Everybody thinks it is a giant goddamn playpen out there with all these cross subsidies [across units within our firm]. Any business ... if we are not profitable within two years, we are never going to get there. (BU President, core unit)

Being-level goals provide a context for the choice of appropriate doing- and having-level goals, but can also create cognitive inertia that hinders the acceptance of new goals (Leonard-Barton, 1992). In our study, strongly held being-level goals among some executives caused them to avoid certain doing-level goals that they viewed as diverging unacceptably from the firm's traditional identity.

> [Our firm] is having a hard time accepting that it is a service company and not a product company. They believe they can succeed on products … But we have become almost religious about it as opposed to respectful. (BU VP-Services, neutral unit)

Further, some of the ingrained being-level goals resulted in doing-level goals or perspectives that seemed out of touch with new market realities. A VP from the neutral unit gave an example of how the firm's strong technology identity led to product design decisions destined to be market failures.

> The company is very product centric and they constantly push to build more complex features and they're so complex they can't communicate them to the customers. We developed a proprietary [product]. It is a beautiful piece of equipment. It is also the most expensive in the world … The competing product is not sophisticated, doesn't have as many security features, has to be replaced every three years, but sells for $2.50. Well, guess what the industry is going for? We haven't moved any and I think that there are 30 million of the other in the market.

Executives from the competitive and core units also expressed concerns that the reverential belief in the firm's technology identity held by long-time firm executives produced a fundamentally flawed view of the firm's relationships with its customers.

> Genetically, they [the management] are incapable of grasping the point that the consumer's view of the world is different. The consumer acquires service, by acquiring a device that carries the service and that's how they think of the world. And so the view that [our firm] has, and that [the OLS unit] has, is essentially wrong. (BU President, competitive unit)

Evidence From the OLS Context: Doing → Having
Doing-level goals regarding entering the OLS market created new having-level goals surrounding expertise, competencies, and personnel.

> Another thing we need to concede is that there is some talent that we lack – skills in dealing with content providers; skills and technologies to make an online service work; how to handle security in an online service; how to develop user interfaces that are truly easy to use. (Corporate Officer)

Having-level goals related to the development and/or acquisition of technology and content were another important aspect of fulfilling doing-level goals.

> To make the [online services offering] successful, we need to make the entire bunch of platforms, which are all different, appear as a seamless super mall out there with the right anchor store and make it easy … to get in there and move between them. Then we need an Internet gateway … a good messaging system. (Corporate Officer, CIO)

Leveraging

In the OLS case, there was abundant evidence of leveraging, that is, of having-level goals becoming institutionalized over time and influencing doing-level goals (Galunic & Rodan, 1998). There was little evidence, however, of doing-level goals affecting being-level goals, except in the general sense that OLS activities had the potential to broaden the firm's image in the marketplace. We believe that this latter finding is due to the degree to which this particular firm's being-level goals had been entrenched and reinforced, over time, to the point of being almost unassailable. We present illustrative data regarding the leveraging process, demonstrating that having-level goals can indeed facilitate the pursuit of certain doing-level goals, but can also hinder the pursuit of other doing-level goals.

Evidence From the OLS Context

Having→Doing: Facilitating Effects. The firm had built up a rich store of assets and competencies. Having these resources in place engendered a variety of doing-level goals that had great potential in the OLS marketplace (consistent with Penrose, 1959). First, because the firm was very diverse in its skills and presence across markets, there were excellent internal partners for creating powerful product and service bundles. For example, a VP commented that "We are the only ones that have product, service, backbone potential, you know, every single piece of the whole game." The OLS president concurred.

> Nobody else in the industry could do the kinds of things we're talking about with internal partners. We have this tremendous advantage of being able to offer devices and services that are integrated. And of course this existing relationship with our customers that we can leverage.

Besides technical collaboration and bundled market offerings, these internal partners potentially provided cross-promotional opportunities for

acquiring customers that might have been unavailable to a new unit in a smaller, less diverse firm.

> We are talking with [another unit] about potentially them selling or using and reselling parts of the services that we're building. In any case, they bring a [another technology] opportunity to us and so we'll be working with them to try and see if we can jointly get their customers to take advantage of our service. (BU Manager, OLS unit)

Next, the firm possessed excellent technical capabilities, described by an OLS manager as "unparalleled and leading edge." Thus, OLS had the option to leverage the technical competence of the firm to build a services delivery platform.

> Because we have technical capabilities, we now have to make a choice between make or buy. Do we buy another company or make the platform? (BU VP, OLS unit)

A VP in the core unit argued strongly that because the firm possessed these capabilities, an acquisition made no sense at all (see opening vignette).

The firm also had a very solid reputation with a large installed base of customers. This brand equity (having-level) impacted the OLS unit's marketing planning activities (doing-level), both in terms of scale and in terms of target.

> I think that our relationship with [a huge base of] existing customers, an ability to bundle an online service with our other products, and our capabilities in terms of infrastructure give us advantages over competitors. We know how to run a network pretty well. We also have customer service centers that are second to none. I think the [company] brand is a strength that we can exploit. (Corporate Officer, PR)

> We can use the brand in customer acquisition and it gives us the ability to attract content providers, who all want to work with (our firm). (BU VP, OLS unit)

Finally, as part of a large, established firm, the OLS unit had access to large financial resources that enabled the managers to experiment with different approaches to market entry (although the majority of quotes suggested that such experimentation rarely took place in practice).

> [We've] got money and this game seems to be getting your money put together and go try things because it's very difficult to do extensive research about consumer type products that are only now starting to exist. Having money so that you can buy a few small services or start a few and get them out there and try to see what consumers take to is a real advantage. (BU VP, neutral unit)

Interestingly, the opportunity to leverage financial resources was not universally viewed as helpful. Executives from the core unit felt that these

accessible resources provided a safety net that reduced the sense of urgency among OLS unit executives. One contrasted a more typical online start-up.

> I think that they are hugely overstaffed for the amount of work they are doing. … You have to compare it to what the competitive, 'real' start-up would look like and not under the umbrella in a huge corporation. [The OLS Unit] would be 10 guys in a garage. … There needs to be lots of people with weird glasses, wearing a lot of black, you know (laughs). (BU Manager, comp unit)

Having → Doing: Debilitating Effects. Several managers suggested that some existing having-level resources potentially inhibited or even completely prevented specific doing-level goals related to entering the OLS market. As some managers' spheres of experience involved only these existing resources, envisioning alternative goals was difficult (Walsh & Fahey, 1986). The first area of concern centered on the leadership selected to lead the effort. Managers from the core unit pointed out that the OLS leadership (picked by top executives from among existing managers) came almost exclusively from units with experience in B2B markets that might not transfer over to the consumer marketplace. Specifically, goals that were appropriate in technology-driven B2B markets may not align the firm with consumers' preferences.

> It is not obvious to me that (the OLS unit) has the total talent to deliver. It's a pretty big undertaking and we haven't had a lot of exposure. (BU VP, core unit)

> they pushed on technology rather than price or market placement. It just confirms that there was no experience at the leadership level in consumer market businesses. (BU Manager, core unit)

Even a manager in the OLS unit commented on how the unit's leaders lacked the competence to plan and execute a proper market entry strategy.

> [They] had a set of financials, but they didn't have a written document that talked about what they were going to do, the strategies, the markets they would enter, the competition, … the operational risks. What are we doing to address them? None of it was documented or even pulled together.

The second area in which having-level goals constrained doing-level goals of the OLS unit was that the firm's established BUs also desired to grab a portion of the online market and possessed the skills and resources to do so. Executives from other units perceived that OLS's having-level goals (i.e., the desire to finish development of their proprietary platform that would support all future OLS market efforts) constrained certain doing-level goals that would be favored by the other units (i.e., the desire to enter the market

as quickly as possible). In defense, the existing units entered niches in the online market and were rapidly acquiring resources for broad-scale entries, and the OLS unit found its opportunities constrained. Thus, the resources held by competing institutionalized BUs created structural inertia (Leonard-Barton, 1992) that fostered conflicting goals (Anderson, 1982; Narayanan & Fahey, 1982).

> One of the struggles that we have right now is that other business units are getting into the fray with their own version of services and platforms and we are spending a lot of time to try to either stop press releases before they go out or coordinate investments or whatever. It would be nice to be an only child. We have all these brothers and sisters running amuck. (BU Manager, OLS unit)

Some OLS executives expressed a sentiment of resignation basically indicating that size mattered; there was no way for tiny OLS to combat the intrafirm competitive efforts of the larger BUs to shape the firm's goals. Others perceived that the debilitating effects of conflict might eventually be overcome by learning benefits.

> And these [competitive service propositions from rival units] … start to interfere with each other. On one hand, that's not good because you have two different initiatives going towards the same goal. But in different ways, you're going to learn more and maybe you can combine what they learn. (BU VP, OLS unit)

Some OLS executives clearly focused on the negative outcomes of cross-unit competition.

> I think that the people who are actually planning the activities are not at a sufficiently high level of [our firm] to really establish the policies that are needed in this area. … It makes no sense to have multiple offerings that are competing and you have to develop and support. It gives a mixed signal to the marketplace and results in an inefficient use of corporate assets. (BU Manager, OLS unit)

Executives from other units saw no need to hold back from deploying their skills and resources in the emerging markets for OLS, despite recognizing that such actions would cause cross-unit tensions. In fact, many saw the OLS unit as a stumbling block to fulfilling their own doing-level goals.

> [OLS] tried to block the introduction of services from other units. That has not only distracted them from their mission, but it has reduced their credibility around the corporation. No alternative is presented, just this resistance to others. (BU Manager, competitive unit)

In fact, one competitive unit VP viewed market entry goals as pure competition against OLS.

> This is a pure and simple power play. It's internal competition. It's who can get out an offer. So if the offer is right or not for overall [our firm] is irrelevant. (BU VP, competitive unit)

Corporate executives were aware of the deleterious effects of such internal conflict on the OLS unit's ability to implement a coherent doing-level market strategy. Still, senior management left the market units to fight for turf without clear guidance or a demarcation of boundaries.

> I have become totally fed up with the inability of these groups to get together and settle their differences and decide that the true enemy is outside this company. And I can't get them to do that. It's basically like working with a bunch of technical children. (Corporate Officer, CIO)

A third area in which having-level goals potentially constrained OLS's doing-level goals involved technology. After the competitive unit acquired a rival service delivery platform, OLS executives expressed concern that they would be forced to adopt this acquired platform.

> We did our due diligence and told our leadership that we didn't want to pursue [a particular online services technology platform]. So [the competitive unit] went and bought it. And the fear, I think, over here is that we'll get some amount of pressure to abandon what we're developing and go use [that platform] since we already own it as a company. (BU Manager, OLS unit)

This fear appeared to have merit as a core unit VP would later state "The logical way would be to say 'we've invested in [basic product], let's make it work.'"

Adapting

Our data included plentiful evidence of adaptation, in which firm goals were altered in response to perceptions of environmental forces, consistent with Pfeffer and Salancik (1978). As Spender (1996) and Kogut and Zander (1996) imply, adaptation is functional for firm survival in the face of environmental changes. In this section, we highlight the adaptation of firm goals in response to technology, general market, consumer, and competitive contingencies.

Evidence From the OLS Context: Adapting to an Emerging Communications Technology
One overarching example of adapting was the firm's very desire to participate in the emerging OLS market, a major diversification goal. The

dissemination of Internet technology was opening a new frontier in communications. A core unit VP stated that this adaptation was fundamentally necessary for the firm's identity as a full-service communication provider and its long-term viability.

> If you have a 10-year horizon, online services are a really big deal and have the potential to change the way people communicate in significant mass market kinds of ways. (BU VP, core unit)

Further, the firm's research was suggesting that technology adaptation with an augmented service was particularly important with younger consumers.

> We don't do as well with the 20–35 age group where people are technically adept and more into doing things like surfing the internet. So we need to win their hearts and minds in that segment [with things like online services]. (BU Manager, OLS unit)

Interestingly, some executives across the four units viewed adapting as necessary not only to participate in new communications markets, but also to deliver on goals regarding shareholder value by diversifying beyond a very mature and increasingly competitive product-market.

> If you look at classic product life cycles, we are still selling 1950s inventions. We're selling [a basic product/service] that's only been around since the turn of the century. And … the margin in that industry is on a permanent downward curve. So our brand has got to move forward to the new applications today … the products we currently sell may be buggy whips. (BU VP, neutral unit)

Evidence From the OLS Context: Adapting to Evolving Consumer Demand
While the firm's being-level self-image arguably resulted in a degree of overconfidence in its ability to win in the new market, executives clearly saw the need to adapt to changing consumer demands for OLS services. Further, the desire for effective adaptation precipitated goals regarding learning about their customers' needs.

> The success of (the OLS unit) has to spin around more consumer awareness and knowledge, and less of intuitive thinking and lack of strategy. I believe that there is no real consumer research input. I believe there is not going to be much success if they decide they're going to change the whole market place based on a new pricing paradigm. (BU Manager, core unit)

Interestingly, executives from the competitive unit were the ones who were particularly adamant that technology should be an enabler of a simple-to-use consumer service. Their consumer research suggested that the service

must be adapted so as to circumvent resistance from mass-market con-
sumers who were wary of overly complex products and services.

> How do you attack a large consumer market? One style is to come at it from the high-
> tech side. Techno-weenies … like this stuff. The other style is to do it with just as much
> technology, but to conceal that from the consumer so that you make it easy to use – very,
> very simple. The consumer attack wins. You must get consumers like my mother to use
> it. … (BU VP, competitive unit)

*Evidence From the OLS Context: Adapting to Changes in the Competitive
Environment*
Earlier, we noted that a major goal for the OLS offerings was to help shore
up the firm's financial returns against intense competition in the core service
markets. However, firms that competed against our focal firm only in the
OLS market, not in the core service market, took actions that forced further
adaptation.

> Most of our best customers are either on (a competitor) or (another competitor), and it is
> a big threat. Especially in addition to that is the threat that (a potential competitor) is
> going to be one of our biggest competitors as well as (another potential competitor). (BU
> Manager, core unit)

One concern was simply the firm's ability to offer a value proposition that
would be attractive to customers relative to offerings from tough
competitors.

> I think that we have to offer something that's different from the 'me-too' offerings of
> (several competitors). The question will be whether we can find something different … to
> enable us to gain share since we are such a latecomer. (BU VP, core unit)

The related concern – probably the most salient adaptation issue in the
eyes of many executives – centered on speed-to-market goals. Several
competitors had offerings that were already out in the marketplace, while
the focal firm was still refining its own in preparation for market entry.

> We have a tremendous uphill battle. Every one of those companies are out there right
> now and we are not. So we are going to have to do something unique. And in our
> uniqueness we have to bundle an attractive offer to our existing [core service] customers.
> (BU VP, OLS unit)

It was also apparent from several comments that even at a more tactical
level the OLS unit had to continually modify its actions to react to its
competitors' moves.

> You don't operate in a vacuum – you have competitors. They make choices which, in turn, govern or limit our choices. You know [a major competitor] buys [target firm] – all of a sudden we don't partner with [that firm]. (BU Manager, OLS unit)

Dynamic Interplay Among Goal-Setting Processes

We now consider the interdependent and nonlinear nature of the three goal determination processes, drawing from two extended illustrations from the case data. The processes are interdependent in that goals created through mandating, for example, can affect and be affected by leverage- and adaptation-driven goals, and vice versa (Simon, 1997). Thus, in our first example, we illustrate how mandate-driven goals were found to conflict with adaptation-driven goals, thereby requiring reconciliation. The processes are nonlinear in that the influence among being–doing–having goals can be cyclical or iterative (Bagozzi & Dholakia, 1999). In our second example, we show how doing-level goals created being-level goals that, in turn, had both facilitating and debilitating effects on new doing-level goals.

Example 1 From the OLS Context: Interdependence and Conflict Between Goal-Setting Processes
It became clear through our interviews that mandating (i.e., fulfilling corporate image as full-service provider; technology leader) and pressure for adaptation (demand for OLS services by young, tech-savvy users; competitors already in the market) both supported the doing-level goal of entering the OLS market. However, the two forces created very different and competing having-level goals. The being-level goal of supporting the firm's self-identity as a high-technology, premier communication service provider produced the having-level goal of *building* (vs. acquiring) the main OLS technology platform. A services VP in the competitive unit stated that "It's absolutely essential that we own the platform and the standards." The assumption was that a platform designed and built by the firm would outperform any other available on the market and would position the firm for long-term competitive service advantages.

> Do you want to be a real competitor [in online services?] You must take risks. You must be prepared to invest in the first three to five years of something that will look unprofitable until the market curve takes off. (BU President, neutral unit)

However, growing consumer demand for OLS services and fast-moving competitors were creating incredible speed-to-market pressures on the firm's OLS efforts.

> [We have scheduled] a whole roll-out of different services and we're trying to finalize the dates. We're under a fair amount of [corporate] pressure to move them up. (BU Manager, OLS unit)

The pressures to adapt to the external environment hence became a dominant factor. While executives appreciated the performance benefits of employing the firm's own technological capabilities to develop a new OLS technology platform, the cost of potential delays in market entry was deemed unacceptable. Consequently, and rather reluctantly, the firm shifted to a goal of acquiring rather than building the delivery platform.

> We can't afford to take our time and develop everything. That means you've got to buy/acquire strategic assets. The one driving force has got to be time-to-market. (BU VP, OLS unit)

Example 2 From the OLS Context: Dynamic, Iterative Effects Among Doing → Being → Doing Goals

As a full-service communications provider, the firm's structure had evolved over time into fairly autonomous BUs, each focused on a specific aspect of the market (e.g., consumer, business, ancillary services). But as articulated by this manager in the competitive unit, the emerging opportunities in the OLS market did not appear to align well with existing structure.

> It's a real situation where the existing business unit definition within the company I think doesn't accommodate the realities of business. All our definitions are breaking down. … For new stuff you technically need a new service and a new product, and they typically only work with each other. … You have to be able to quickly change both halves. And that's very difficult to do when those halves are located in two separate business units.

Although the creation of autonomous BUs was mainly an outcome of previously implemented doing-level goals (as suggested by Dosi & Marengo, 2007), the units themselves had taken on institutionalized identities, over time, so as to morph into being-level entities. The being-level status of the units, in turn, created some incompatible doing-level goals for the firm. Wanting to approach the market via doing-level goals that were based on their own unique aspirations, some units resented the OLS unit's charter.

> In my division, we have a set of services that we are ready to launch today. And (management) wants us to hold up on (the new OLS unit) because they're not ready. (BU VP, competitive unit)

Others argued for the need to somehow cut across unit lines to go to market with a unified, bundled offer, taking advantage of synergistic market power.

> I think that there is a definite danger … that we will splinter the hell out of the
> marketplace and will have a little bit of it being done in different business units. I think it
> would be better if we consolidate all of those elements into one business unit. (BU
> Manager, competitive unit)

Several executives argued (correctly, in hindsight) that these conflicting
doing-level goals would lead to the firm's failure to succeed on a broad scale
in the OLS market.

> There is a tremendous smokestack mentality that [our firm] has crafted. … If we're going
> to offer [an online service] …, we have to do it as a seamless [firm]. I'd go so far as to
> say that could be the single biggest reason why we don't succeed (BU VP-Services,
> neutral unit)

SUMMARY AND DISCUSSION

Although prior research has touched on the purposive nature of firm
behavior (e.g., Anderson, 1982; Walsh & Fahey, 1986), to the best of our
knowledge no one has offered an overarching framework of the goal-setting
microprocesses within the goal-directed firm. Thus, in the interest of
advancing theory and guiding future research, we propose an integrative
view that includes a hierarchical framework of firm goals and a dynamic
model of the goal determination processes that drive firm strategy. This
work enhances understanding of the different concurrent forms of goal
formation and change (e.g., top-down vs. bottom-up processes, and
adaptation), the dynamic interaction between these processes, and the
nature of the resulting strategy decisions. And, perhaps more importantly,
this perspective gives us a conceptual vantage point for analyzing how firm
goals are actually set and changed at different levels in a given firm, and how
those goals eventually affect the firm's behaviors and outcomes in the
marketplace. Thus, our chapter addresses Argote and Greve's (2007) call for
theory development that recognizes the social processes and contextual
factors that affect organizational actions.

Moreover, our conceptual approach integrates and expands significantly
on previous perspectives. For example, Chaffee (1985) and Dickson (1992)
both provide excellent insights into the interplay between mandating
(formal, top-down goal determination) and adapting, with the bounded
rationality of managers playing a key role in both processes. These scholars,
however, do not consider organizational goals that are formed by leveraging
considerations. In contrast, resource-based views of the firm argue that
resources such as alliances, assets, competencies, etc., contingent upon

management action, are the primary determinant of firm success (Barney, 1991; Moorman & Slotegraaf, 1999), but overlook the roles that mandating and adapting play in firm goals. Our case study highlights the importance of all three processes and provides evidence of each.

Most importantly, we would argue that to understand the reality of how firms set and alter goals, it is imperative to take into account all three of the goal-setting processes and the dynamic interplay (as well as potential for conflict) among them. By adopting such a conceptual approach, it also becomes possible to illuminate work done in other areas of organizational science. For example, the present approach potentially contributes to the stream of research on managing strategic contradictions (cf. Smith & Tushman, 2005) by explicating the inertial constraints on action that are created by being- and having-level goals. Further, as we discuss next, the present approach provides an analytical framework to understand how and why strategic decisions made in specific organizations may lead to particular positive or negative outcomes.

The Nature of Each Goal-Setting Force and the Need for Balance

Our research suggests, first, that each goal-setting process is characterized by potentially facilitating as well as debilitating effects (see Table 1, panel A for a summary). For example, although mandating is potentially efficient in terms of firm-level decisions being made rapidly, if mandates are issued without consideration of existing goals held by participants who are lower in the hierarchy, conflict can occur. In the OLS case, the mandate-driven formation of the OLS unit fomented resentment among the existing units who were already engaged in the formation and execution of goals to enter the emerging OLS marketplace. Although these other units provided personnel and other resources to the OLS unit, as required by top management, the interview transcripts provide evidence that they never threw their wholehearted support behind the initiative which had been thrust upon them, perhaps even engaging in subtle resistance to the goals of the OLS unit. Similarly, goals that emerge through leveraging and adapting can have positive, but also negative, ramifications.

Second, our research suggests that firms would be better off to employ the three goal-setting processes in a balanced manner. Referring back to our case study, higher-order, being-level goals dominated the firm's thinking and inhibited the firm's need to be more adaptive in the face of a poorly understood and rapidly evolving new market. In hindsight, the firm needed

Table 1.   Three Goal-Setting Processes: Potential Effects
and Balance Issues.

Panel A: Potential facilitating and debilitating effects of mandating, leveraging, and adapting

	Facilitative Nature	Debilitative Nature
Goal-setting process		
Mandating	Provides focus	Not participative
	Efficient (decision speed)	Can be rigid
	Establishes priorities	Can stifle creativity
Leveraging	Uses core competencies	Too many divergent markets
	Employs expertise	Core rigidities/inertia
		Existing position biases
Adapting	Aligns with market realities	Change can be difficult
	Key for dynamic environments	Costly
		Potential for "knee-jerk" reactions

Panel B: Balance issues among mandating, leveraging, and adapting

	Balance Issues if Goal-Setting Process is Overemphasized Relative to:		
	Mandating	Leveraging	Adapting
Goal-setting process			
Mandating		Lack of implementer buy-in	Out of touch with market
		Misses implementer insights	Misses emergent trends
Leveraging	Suboptimization at firm level		Marketing myopia
	Dispersion of effort		Uses obsolete strategies
	Position bias conflict		Uses obsolete assets
	Loss of identity at firm level		
Adapting	Chasing whims	Neglects to use existing competencies	
	Constant change	Excess resource costs	
	Mistakes due to perceptual errors	Insufficient investments in updating existing assets	
		Lack of expertise	

to invest in and respond to customer research, for example, by creating an integrated value proposition that was not delimited by existing BU boundaries. Further, the firm's extensive knowledge of customers ("having") from its rich history of service to traditional consumer and business customers led to overreliance on this aging asset and an overconfident attitude toward the all-important task of understanding the new OLS markets. Similarly, adaptive (speed-to-market) pressures indicated a need to move away from the firm's typical reliance on its in-house R&D prowess. Nonetheless, pride in doing things in the firm's traditional way and a focus on developing a top-of-the-line technical marvel caused many executives to battle persistently against a more nimble, acquisition-based market entry.

This discussion suggests that, thanks to the interplay among the three goal-setting processes, some goal conflict may be inevitable. Conflict is not necessarily bad; as noted by Keaveney (2008) in her study of conflicts between marketing and engineering personnel, productive debate can create a marketplace of ideas from which superior decisions can emerge. At the same time, it seems clear that the three goal-setting processes can interact in ways that are productive as well as in ways that are quite counterproductive. Specifically, if a particular goal-setting process dominates one or both of the other two processes and, consequently, the firm's overall strategic decision-making, the long-term outcomes are likely to be suboptimal. Table 1 (panel B) shows possible consequences of imbalanced goal-setting processes.

Although the firm in our case study likely needed to be more adaptive and less driven by mandating, mandating is not universally bad. When a market exhibits stability in its competitive and technological environments, a firm's past actions and outcomes can be analyzed to form the basis for future strategies (given that future conditions remain similar). Top management can analyze this evidence and issue mandates that enable the firm to profit from established bases of competitive advantage. It is also possible that firm-level managers draw upon information and intuition to develop a clear vision for the future of a market; mandates are used to create that future. But in some market situations, input–output relations are so unclear that mandating becomes a "shot in the dark." Rather than relying on chance under these conditions, firms must take actions – based on leveraging or adapting – and learn from the results (Dickson, 1992; Mintzberg, 1987).

In hindsight, the market for (and technologies underlying) OLS was evolving so rapidly that the managers in our case could not rely on knowledge of the past to form mandates. Still, balance among the goal-setting processes is vital. Neither could the firm be certain that assets that

enabled success in the telecommunications market would not be effective in
OLS; thus, leveraging had limits as a goal-setting process in this context.
Even adapting, a process that is clearly critical in dealing with market
dynamism, could splinter the firm and lead to resource waste if the firm
responded in a knee-jerk fashion to every signal that emerged from the
market. Although mandates are likely ineffective in dynamic markets when
a firm does not also leverage or adapt, it is also evident that leveraging and
adapting, in isolation, can lead a firm down unintended and unattractive
paths if no coordination or direction is provided by mandating. Therefore, a
dynamic balance among the three goal-setting processes is essential.
Eisenhardt and Sull (2001) suggest such a balance when they argue that
top managers should carefully frame "simple rules" that chart a strategic
direction for the firm, but then allow market unit managers the freedom to
experiment within the boundaries of those rules, leveraging or adapting as
needed. Along these lines, we offer a third proposition:

> **P3.** Each of the three types of goal-setting microprocesses has the
> potential for facilitating as well as debilitating effects on firm outcomes;
> thus, a dynamic balance is needed among them to optimize firm strategy.

The Value of a Discovery-Oriented Research Approach

We would note that our illustrative empirical evidence did not simply
confirm the two propositions that were developed on the basis of our
synthesis and extension of theory. In addition, a third proposition emerged
from our analysis of the data, providing a novel insight that theory would
not have directly predicted. This outcome is an illustration of the value of
discovery-oriented research in which new knowledge can be created even in
seemingly mature research domains. In short, we did not just demonstrate
the operation of our integrative framework, but we learned something new
about our focal phenomenon – organizational goal-setting processes.

Limitations and Directions for Future Research

We believe that our proposed behavioral view of the firm may be applied to
any organization. In the current chapter, we examine a specific firm entering
a new but ill-defined and dynamic market. Future research could examine
the applicability of the framework to other organizational contexts, such as

network organizations, that is, complex clusters of firms or clusters of functions within a firm that do not fit neatly into more traditionally accepted definitions of firm behavior (Gulati, 1998). Our framework could be used for understanding the complex nature of strategy development within this complex domain. For example, network partnership agreements could mandate the coordinated pursuit of specific goals, but as individual firms within the network face unique environmental forces, adaptation-driven goals may diverge across partners. Further, literature on contracting (Macneil, 1980) suggests that it is impossible to specify all potential contingencies. Thus, firms that enter a network to fulfill specific having-level goals may possess doing- or being-level goals that motivate them to misappropriate having-level resources or to use those resources in a manner that is against the spirit, but not the letter, of a contract between alliance partners.

Another area in need of future research involves managerial perceptions regarding the relationships among various assets and goal attainment (Gavetti, 2005). In our discussion of having-level goals, we argued that managers seek to acquire assets and capabilities that they perceive will lead to the achievement of higher-level goals. Clearly, perceptual biases and errors could influence resource assessments and subsequent strategic decisions. For example, managers could be unaware of a resource's promising applicability to a particular problem. Alternatively, managers could mistakenly believe that an ill-suited resource is appropriate for the achievement of a goal. In their theory of consumer goal setting, Ratneshwar et al. (1999) draw from the ecological psychology literature to discuss the idea of an "affordance" (Gibson, 1979), that is, the goal-directed perception that a resource enables (or "affords") a particular action (Janiszewski, 2008). Applied to our context, if executives do not perceive that a particular asset leads to a specific outcome, they may not acquire the asset or, if acquired, will not effectively utilize this asset. Thus, we believe that empirical investigations into the role of affordances in the goal-directed behavior of marketing strategists are warranted.

Our model and illustrative empirical application are subject to a number of other limitations that should be addressed in future research. For example, the primarily descriptive view presented here could be contrasted against a more prescriptive or normative view of strategic goal determination. Future research could also examine in more depth the relationship of the present framework with different types of organization structures, including smaller and flatter organizations. Our model also needs further external validation. One approach would be through interviews with

individuals in other companies currently engaged in both individual and network strategy formation. Another approach would be to develop survey-based measures of strategic goals that could be employed in large-scale cross-sectional or longitudinal studies. Future studies of managers using means-end laddering tasks (Reynolds & Gutman, 1988) might also suggest needed refinements to the current framework. More generally, we hope this chapter inspires future research that will continue to develop our knowledge concerning the critical issue of *how* strategic goals are set and altered in organizations.

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INTERNET CHANNEL CONFLICT: PROBLEMS AND SOLUTIONS

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ABSTRACT

This chapter reports the findings of a large-scale study investigating the issues that arise when firms introduce a new Internet channel. Our analysis offers three key contributions. First, we provide a framework to guide firms in anticipating and understanding the unique challenges of introducing an Internet channel. Second, we present a menu of alternatives to address these challenges. Finally, we pose a series of questions which identify which solutions are most appropriate given the particular market and firm context.

1. INTRODUCTION

New marketing channels can have a profound effect on the business landscape. Sears founded an entire industry when they pioneered the mail-order channel with the legendary *Sears Catalog*. Supermarkets presented a new retail format that fundamentally changed retail competition. The Internet introduced one-to-one marketing with a scalable cost structure. In each case, those managers who understood the implications of the new marketing channel won and others lost.

While new marketing channels are introduced only infrequently, in the late 1990s and early 2000s, we were fortunate to observe such an introduction in the form of the Internet. In light of the important implications of this radically new distribution channel, in the spring and fall of 2000, we conducted over 100 interviews with marketing executives that explored how the advent of an Internet marketing channel changed their business, and how they responded to it. Our study presents a unique opportunity to identify the key problems and concerns firms face when they transition to an additional channel of distribution, and solutions that have been applied to effect successful transitions.

The interviews were timely, having taken place just prior to the dot-com implosion, which further changed the marketing terrain. Despite these dramatic shifts, we document that many of the fundamental concerns identified by managers in 2000 continue to be relevant today. This unique historical snapshot describes the origin of managerial challenges that continue to affect today's marketplace and that remain in the forefront of academic research on Internet channels.

Our interviews identified three key concerns:

1. *The Internet threatens relationships between existing channel members*.
   The Internet provides competition for existing channels, thereby threatening the income, and in some cases, the continued presence, of these traditional channels.
2. *The Internet leads to coordination problems*.
   The introduction of an additional channel increases the need for communication due to more decision-makers and greater dispersion of information.
3. *The Internet destroys traditional segmentation criteria*.
   Firms use multiple distribution channels to target different segments with discrete marketing offerings. However, the advantage of targeting customers through different channels is undermined if customers have access to both channels.

In Fig. 1, we present a conceptual model that also serves as an outline for this chapter.

We begin by citing examples from our interviews and current practice to illustrate the three concerns and the related adverse consequences. We then link these concerns to the extant literature by identifying the underlying theoretical problem. Last, we describe the varying solutions that were implemented to address these concerns. Because the appropriate solution
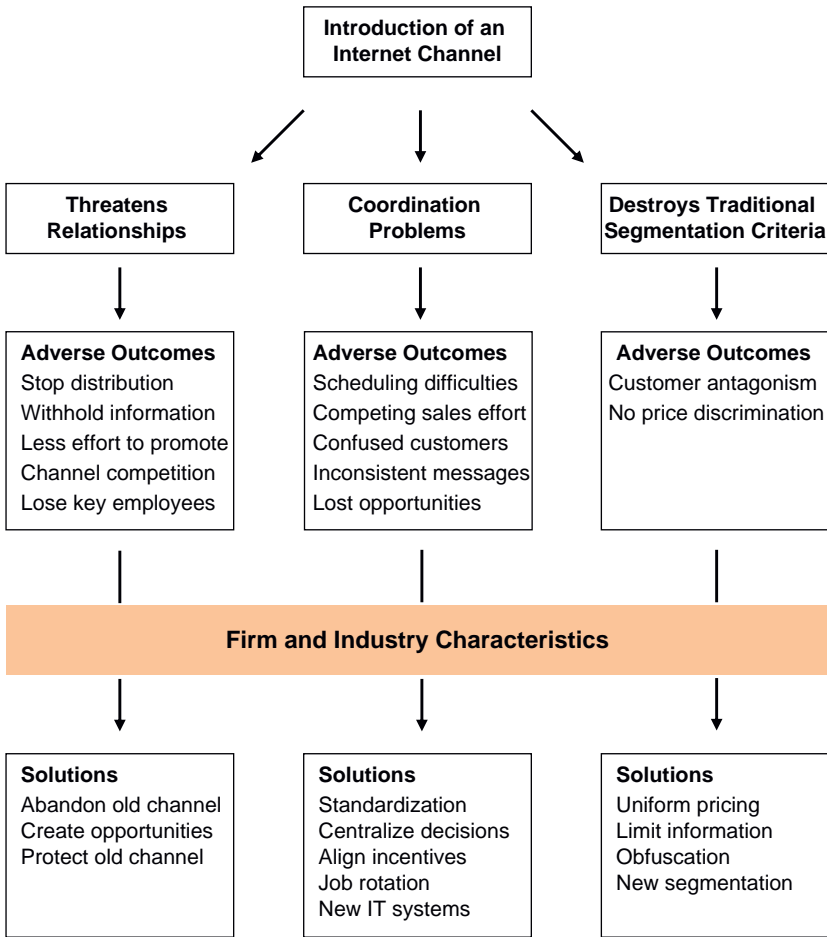
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                   ┌──────────────────┐
                   │ Introduction of an│
                   │  Internet Channel │
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Threatens Relationships	Coordination Problems	Destroys Traditional Segmentation Criteria

Adverse Outcomes	**Adverse Outcomes**	**Adverse Outcomes**
Stop distribution	Scheduling difficulties	Customer antagonism
Withhold information	Competing sales effort	No price discrimination
Less effort to promote	Confused customers	
Channel competition	Inconsistent messages	
Lose key employees	Lost opportunities	

Firm and Industry Characteristics

Solutions	**Solutions**	**Solutions**
Abandon old channel	Standardization	Uniform pricing
Create opportunities	Centralize decisions	Limit information
Protect old channel	Align incentives	Obfuscation
	Job rotation	New segmentation
	New IT systems	

Fig. 1. Overall Framework.

varies with the market and firm context, we include a series of questions to identify when each solution is appropriate.

1.1. Description of Data and Methodology

The data for our study were collected in two phases. In the first phase, we conducted open-ended and largely unstructured interviews with managers at

15 companies. We asked managers to describe how their firms had used the Internet and what problems they had encountered. Managers provided us with detailed examples of situations they had faced and the solution they had implemented. When possible, we tape-recorded the interviews and then transcribed the exact dialogue. These interviews left us with an under-standing of the diversity of problems managers faced.

In the second phase, we supervised open-ended interviews with managers at over 140 firms. The results from the first phase of interviews were used to structure the interviews in this second phase. Subjects were asked to identify an example of a conflict that had arisen following the introduction of an Internet channel. They were then invited to elaborate on the nature of the conflict and the firm's response to it. Each interview was summarized in a four- to five-page document, in which the interviewer described the general problem and then provided a detailed description of the problem and solution (if any).

The firms represent a convenience sample identified using an extensive network of contacts. The information derived from our interviews yielded a rich source of data from a broad variety of industries. A summary of the number of interviews and firms by industry is provided in Table 1. Each of the authors, together with graduate research assistants, then conducted an assessment in which each interview was carefully reviewed and then coded into a database. The database includes a summary of the problems faced by each firm, together with a description of the solutions that the firm implemented. The authors then began an extensive process to construct a conceptual model that described these problems and solutions. This categorization began with an initial grouping of the problems using narrow definitions of each issue. A very large number of issues emerged, which were then summarized into a broader, more general framework through an iterative process that proceeded in several stages. Finally, to check the accuracy of this process, we reviewed and reconciled each interview with the proposed framework.

1.2. Organization of the Chapter

The remainder of the chapter is organized as follows. In Sections 2–4, we discuss each of the three major problems associated with the introduction of an Internet channel. In Section 2, we examine the threat to traditional channels; in Section 3, we discuss coordination problems; and in Section 4, we assess the impact on segmentation strategies. In each section, we first

Table 1. Interviews by Industry.

Industry	Number of Interviews	Number of Firms
Airline	7	6
Apparel	7	6
Automotive	11	8
Books	8	5
Computers	4	4
Consumer durables	17	10
Education	3	3
Financial services	15	15
Food, beverage, personal care	9	9
Housewares and furniture	6	6
Industrial durables	13	13
Music	3	3
Newspaper	7	5
Office supplies	6	4
Other	2	2
Publishing	8	8
Retail	16	12
Service	2	2
Software	4	4
Sporting goods	9	9
Telecommunications	6	6
Transportation	2	2
Total	165	142

describe the nature of the problem and the resulting adverse outcomes. We then present an analysis of the underlying issues and identify the range of available solutions. Finally, we pose a series of questions that managers can ask to identify which solutions are appropriate to their firm and industry. Section 5 concludes the chapter with a review of the findings and a discussion of scenarios in which firms did not encounter channel conflict.

2. THE INTERNET THREATENS RELATIONSHIPS BETWEEN EXISTING CHANNEL MEMBERS

Participants in traditional channels often perceive the introduction of an Internet channel as a source of competition. This results in two closely related complaints. The first focuses on the returns the traditional channel

earns on its historic investments in a brand. The second complaint focuses on the returns the traditional channel earns on its current investments in promotion and service.

2.1. Threatened Returns on Historic Investments

Channel participants who contribute to the development of a manufacturer's brand expect to share in the rewards from this development. The introduction of an Internet channel threatened to "disintermediate" existing channel partners, preventing them from earning returns on their historic investments in the channel.

This problem is well illustrated in an interview with Allstate Corporation. Allstate is one of America's largest insurance companies, with more than 15,000 agents catering to more than 14 million households. While competitors aggressively pursued Internet channels, Allstate moved more slowly because it was concerned about its agents' reactions. A senior vice president at Allstate reported that "Allstate agents have created a tremendous brand image over the last fifty years, and would likely have looked askance if we bypassed them and went directly to customers." Customers' communications with the company were through the agents, and managers were concerned that the sale of insurance over the Internet would detract from this relationship-based approach. Should these agents have become dissatisfied with the evolution of Allstate's distribution channels, they could have potentially jeopardized the Allstate brand.

The perceived threat to traditional channels was greater when the Internet was either a close substitute or a superior alternative. Travel agents, real estate agents, and investment brokers all were wary of the Internet, as it enabled customers to interact directly with the firm. The strength and exclusivity of client relationships had in the past enabled agents and brokers to share in the wealth created by the transactions they facilitated. Whether a relationship survived the challenge of the Internet provided a litmus test as to the strength of these client relationships.

Travel agents' fears that the Internet would undermine their business were well founded. While it had always been possible for consumers to book tickets by calling airlines directly, travel agents had historically served as a convenient price comparison source. However, through the advent of the Internet, travel agencies such as Expedia.com and Travelocity.com provided easy access to this information. By 2004, an estimated 66% of Internet users

were accessing the Web to search for information related to travel (Horrigan, 2004).

The return on historic investments was also threatened by the Internet's unrestricted geographic reach, which enables it to overcome local geographic exclusivities that have yielded regional monopolies in traditional channels. This conflict is best illustrated by Avon and Mary Kay, who sell cosmetics and beauty supplies directly to women. Avon is perhaps best known for its reliance on a direct sales force of ''Avon Ladies,'' a channel they have relied on for more than 100 years. Avon Ladies close the sales and then distribute products to their customers. In an effort to reach out to more consumers and accelerate its growth, Avon began selling products on the Internet in the late 1990s. Mary Kay faced the same opportunity to sell direct on the Internet, but chose to protect its sales force's historic investments in customer relationships. Today, Mary Kay uses the Internet to improve channel coordination. Customers may purchase items via the Internet, but orders are credited to a local representative who delivers the product to the customer.

Auto dealers also perceived that the Internet could potentially affect the local geographic monopoly that they enjoyed. Historically, dealers' geographic dispersion and consumers' comparatively high travel costs limited how many dealers each customer visited. When the Internet emerged as a distribution channel, some car dealers, such as Thom Toyota on Route 1 in Norwood, MA, quickly embraced the channel as a source of leads. This company reported that its Internet customers lived, on average, 45 miles away from the dealership, a much larger radius than customers who purchased through its traditional channel.

2.2. Threatened Returns on Current Investments

The second major complaint from members of the traditional channel focuses on returns from more immediate investments in promotion and service. Several managers cited examples of customers who received advice and pre-sales service, but then left their stores to purchase the item in question at a lower price over the Internet. The experiences of Almacenes Paris and Staples illustrate this problem. Almacenes Paris, a leading department store company in Chile, launched its online store Almacenesparis.com in September 1999, and enjoyed considerable initial success. Significantly, the company's online prices were 7–9% lower than those at its physical stores. Thus, many customers would go to the stores to view

products and seek assistance from salespeople, while buying the products on Almacenesparis.com. Not surprisingly, this created conflict with the traditional commission-compensated sales personnel. Staples, the office supply giant, established Internet kiosks in retail locations in order to give consumers access to Staples.com. In response, store managers complained that Staples.com was free-riding on the stores because the revenues accrued only to the Internet division.

Conflict with a traditional channel does not require that the traditional and Internet channels actually compete on a direct basis. Conflict occurs even in markets in which the channels serve different segments or where no transactions are conducted over the Internet. The traditional channel's competitive position may be damaged simply by the efficiency with which the Internet informs customers about competing prices and the availability of alternative retailers. The automobile industry offers an example. Automobile manufacturers have developed sophisticated Internet sites that provide customers with price and product information and inform customers about the location of authorized dealers. Dealers have long disliked the availability of model, option, and price information on manufacturers' Web sites. Even though customers cannot purchase directly from manufacturers' Internet sites, this information nonetheless makes it easier for customers to compare prices across dealers and reduces a dealer's information advantage during the bargaining process.

There is evidence that customers have embraced this new source of information and that it results in lower prices. J. D. Power reported that in 1999, 40% of new automobile buyers used the Internet during their purchasing process. This increased to 54% in 2000, and to 67% in 2006 (Power, 2000, 2006; see also Zettelmeyer, Scott Morton, & Silva-Risso, 2006a). Zettelmeyer, Scott Morton, and Silva-Risso (2006b) estimate that new vehicle buyers who use the Internet pay 2.2% less for their car than those who do not use it, a savings of $500 on the average car. The effect is particularly strong for customers who have traditionally paid higher prices, including minorities and women (Scott Morton, Zettelmeyer, & Silva-Risso, 2003). Similar findings are also reported for the insurance industry. Brown and Goolsbee (2002) show that the growth of the Internet is associated with an 8–15% reduction in the price of term life insurance.

2.3. Adverse Outcomes

In 2000, perhaps the most dramatic responses from the traditional channel were threats to not distribute products that were also available on the

Internet. Ryobi Group, manufacturers of Craftsman power tools, was among those that received a "cautionary" letter from Home Depot, which sells a large volume of Ryobi's products. Home Depot's letter warned that if Ryobi undercut Home Depot's prices through an Internet channel, they might be dropped as a supplier. Similarly, a vice president at Warner Bros. Records reported that one of the leading CD retailers, Tower Records, threatened to stop carrying the products of those labels that were selling directly to consumers over the Internet. Other music retailers demanded increased payments to promote albums if their record labels were selling directly to consumers on the Internet. At least in the case of the music industry, the concern of the retailers was appropriate. By 2008, online sales became the norm in the music industry and many music retailers, including Tower Records, were forced into bankruptcy.

An alternative response by the traditional channel to these perceived threats was to withhold information from channel partners about customer preferences, customer identities, and inventory levels. Access to this information was valuable, as it allowed firms to optimize manufacturing and marketing decisions and coordinate activities between their channels. Kodak's foray into digital imaging in early 2000 illustrates this problem. In addition to providing tools to retailers for digital image processing, Kodak offered similar services directly to consumers. Kodak's services ranged from "Picture Maker" kiosks for digital editing, reprints, and enlargements to Digital Lab Systems for scanning and printing, and to Print@Kodak for uploading, storing, and sharing pictures online. Kodak's dual role as supplier to retailers and direct seller to end-consumers made retailers reluctant to share data about consumer behavior and preferences that can be gathered when processing digital images. In 2000, retailers were more likely to claim ownership of this information because they were afraid that Kodak's use of this information would enable it to market directly to consumers. This not only hurt Kodak's ability to cross-sell, but also led to channel inefficiencies because marketing and product policies were not optimized.

Traditional channels also responded to perceived threats by reducing efforts to promote products that were available on the Internet. If compensation schemes consider only the performance of a single channel, channel participants tend to focus on activities that benefit their channel alone, often to the detriment of other channels. The traditional channel may refuse to answer customers' questions related to Internet operations, or refuse to accept product returns and warranty claims. Participants in the traditional channel argue that performing these services amounts to additional work, with no increase in compensation. West Group is the legal publishing division of Thomson Corporation. It has a wholly owned field sales force, which sells

legal materials on an auto-renewal subscription basis, so that a single sale by a representative has substantial lifetime value. In 2000, a new Westgroup.com Internet store accounted for a small but growing portion of new sales. As the Internet became more established, the conflict between the field representatives and the Internet was evident. The "Sticker Incident" symbolized the problem. An outside consultant who traveled with a West Group field sales representative reported the incident as follows: as the representative gave collateral to his customers, he attached a sticker with his contact information directly over the West Group Web address, explaining, "I wouldn't recommend using the Internet, and I'll tell you why. First of all, if you call me, I'll make sure nothing goes wrong with your order. Second, you know I need the commission to put food on the table."

Other traditional retailers and distributors responded to the threat of competition from the Internet by developing their own Internet channels, including, for example, Tower Records, Macy's, and CompUSA. Ironically, many of these firms found themselves having to resolve channel conflict issues within their own firms. Employees of the traditional channels often expressed the same concerns as external channel participants. They feared that the value of their customer relationships would be undermined and were concerned that they would not be compensated for efforts that increased sales in the Internet channel. They responded in similar ways, refusing to promote products that were sold on the Internet, and favoring customers who purchased through the traditional channel when providing post-sales customer service.

Several firms experienced resignations by some of their most valued employees, who perceived selling on the Internet as a threat to their income. An example is BBO, a Venezuelan-based financial services firm with activities in asset management, brokerage, corporate finance, and derivatives for the Andean region. In mid-1999, BBO started offering fixed-income trading services via the Internet. Following an increase in promotional expenditure on the Internet channel, two of the most important traders resigned, ostensibly over concerns that their clients would migrate toward the online channel and deprive them of commissions.

2.4. Underlying Issues

The undermining of historic investments can be characterized as a *hold-up* problem (Williamson, 1985). Investments were made without anticipating that the Internet would change each party's reliance on the established

relationship. The Internet enabled some manufacturers to pursue alternative distribution options, without compensating downstream channel members for their prior investments. If the Internet is an effective distribution alternative, then there is little that traditional retailers, such as music stores and travel agents, can do to preserve the current relationship. A threat to terminate the relationship is unlikely to deter manufacturers if there is a viable alternative distribution channel available.

As long as the traditional channel's investments are not specific to the relationship with the manufacturer, the investments may have value elsewhere. For example, the relationship between a customer and an investment broker may not be tied to the brokerage firm that employs the broker. As a result, investment brokers may be able to convince clients to shift to a new brokerage firm if their original firm holds them up (Gertner, Knez, & Simester, 2000). However, when the investments are specific, so that their value is limited to the original relationship, then the traditional channel is left in a weak bargaining position. Insurance agents who have invested exclusively in the Allstate brand have few options available to preserve their investments in the brand should they choose to represent another insurance company. The outcome is not just lost income for the traditional channel. Unsurprisingly, these channel partners are reluctant to make any future investments that are specific to the relationship.[1]

The hold-up problem arising from long-term investments can also be distinguished from problems that arise with investments designed to yield immediate payoffs, such as pre-sales service. These short-term investments are less susceptible to hold-up threats because while the frequency of investment may be high, the level of exposure is small. If a manufacturer's actions undermine the returns earned on current transactions, the channel can simply withhold its investment in future transactions. Rather than hold-up, short-term investments are subject to *free-rider* problems. When customers receive pre-sales service from a traditional retailer and then leave the store to purchase at a lower price through the Internet channel, the Internet channel is free-riding on the efforts of the traditional channel. A version of the free-rider problem also has historically arisen between retailers. Competition between traditional retailers may lead to customers receiving pre-sales service at one store and then purchasing from a second store; in this example, the second store free-rides on the efforts of the first store (Shin, 2007). The Internet has introduced a free-rider problem between a retailer and the manufacturer itself. The outcome is not just lost income for the traditional channel, but also underinvestment in pre-sales service.

2.5. Solutions

In 2000, manufacturers pursued a variety of strategies to address hold-up and free-rider problems. We categorize these strategies under three headings:

1. No longer rely on investments from the traditional channel.
2. Create opportunities for the traditional channel to benefit from the Internet.
3. Mitigate the threat to the traditional channel.

The selection of an appropriate strategy depends on the answers to the following questions.

2.5.1. Is the Threat Real?

Although there were many examples in 2000 of strong reactions by channel members, systematic evidence that the Internet channel was damaging the traditional channel's business was rare. In many cases, the trigger for conflict is one or more specific examples of a traditional channel customer purchasing via the Internet. Some manufacturers were able to allay the concerns of their traditional channel by claiming that these examples were isolated. In support of these claims, they argued that the Internet provided access to new customer segments and did not cannibalize from existing customers. For example, the *Boston Globe* argued that the availability of an online version enabled the newspaper to access readers who historically did not read the printed version. This argument was somewhat disingenuous, as there is now strong evidence that online newspapers did cannibalize from their print editions. Using data from the Washington, D.C. market, Gentzkow (2007) estimates that the online paper reduced print readership by 27,000 per day, at a cost of $5.5 million per year in lost print profits.

Even where there was evidence of a credible threat to the traditional channel, other firms pointed to the entry of competitors and claimed that ignoring the Internet would not protect the traditional channel. For example, automobile manufacturers anticipated that it would be impossible to prevent product information from becoming available to customers online, even if the information were removed from their own Web sites. Similarly, it quickly became apparent that digital distribution was a formidable threat to established channels of distribution in the music industry. To some extent, the industry-wide failure to manage this channel contributed to the explosion of illegal music distribution.

2.5.2. How Important will the Traditional Channel be in the Long Term?

In some industries, the segment of customers who purchase from the Internet channel is relatively small and will remain small in the foreseeable future. In markets where a significant segment of customers will continue to prefer the traditional channel, firms may find it preferable to limit the growth of the Internet channel, perhaps by restricting the pricing and product options available to this channel.

In 2000, there were many examples of firms who responded to evidence of conflict simply by withdrawing from the Internet channel as a means of purchasing. Rather than close their Internet sites, firms maintained an Internet presence but required that customers complete their purchases either through the Internet sites of their traditional retailers or through the traditional channel. For example, it was extremely costly for dealers to maintain an inventory of Kawasaki parts, and the Internet was perceived to be a more efficient distribution channel. Despite the efficiency gains, Kawasaki dealers opposed the Internet as they feared this would damage their customer relationships. In 2000, Kawasaki's response was to put its entire parts catalog online but not to allow ordering. Once this policy was initiated, customers were able to enter the model and VIN of their product, look up the parts they needed for their motorcycle or jet ski, or see drawings and part numbers. When it came to purchasing, however, customers were required to go to a dealer. In 2008, Kawasaki continues to use the Internet in the same manner and sells only ancillary items such as clothing that do not pose a threat to dealers.

Where the Internet was expected to become the dominant form of distribution, manufacturers were much more aggressive in developing this channel, despite the risks this posed to relationships with traditional channel members. Consistent with this prescription, major recording labels moved forward with plans for the direct distribution of their songs, despite protests from major retailers such as Tower Records. Airlines were similarly unaccommodating of travel agents' protests.

To evaluate the long-term importance of the traditional channel, manufacturers should consider whether the Internet has inherent efficiency advantages in satisfying customer needs. Examples of such advantages are that: (a) purchasing need not coincide with traditional retail hours or sales force schedules, (b) customers may obtain their own product and service information, and (c) the Internet may provide an effective delivery vehicle for products that do not involve a physical product or service. However, even in the presence of these advantages, many customers continue to prefer traditional channels despite the availability of an Internet channel.

For example, in the insurance and finance industries, customers are often reluctant to provide confidential information over the Internet. Problems also arise when customers must choose from a range of product or service options. Customers who lack expertise value the advice provided by sales representatives. Firms have discovered that it is often difficult to provide this advice over the Internet in a manner that is both comprehensive and sufficiently customized to individual customers.

2.5.3. Are there Actions Available to the Manufacturer to Protect the Traditional Channel?

Firms have a range of options available to protect their incumbent channels. For example, Hallmark, which wanted to develop a strong Internet presence while maintaining the ongoing support of its network of privately owned retailers, developed an online strategy to increase demand for Hallmark-branded products at its traditional retail stores. To increase demand at its Gold Crown Stores, Hallmark provides online information about collectibles, such as artists, release dates, and availability. In addition, Hallmark.com promoted the Gold Crown Card (frequent buyer awards program) that may only be used in Gold Crown Stores. According to one retailer who owned three stores in Colorado, two in New Mexico, and two in Arizona, Gold Crown Card sales were a significant source of revenue for Gold Crown Stores in 2000.

Revising the method of compensating the traditional channel can provide new incentives for the traditional channel to support the Internet channel. For example, several firms compensated their traditional channel for all sales, even if the transaction occurred over the Internet. However, incentive schemes that compensate the traditional channel for Internet channel sales can lead to the traditional channel receiving compensation without performing any work. For example, in 2000, Staples allowed salespeople at retail locations to place orders for large products and furniture with the Internet division. This enabled Staples to reduce warehouse space at each location without creating channel conflict. Retail stores earned profit on each sale without bearing inventory, handling, or distribution costs.

Effective incentives are generally contingent on obtaining accurate measurements of the traditional channel's effort. Our interviews identified two common obstacles to obtaining these measures. First, activities in one channel may affect performance in another channel. Measures of sales, product returns, warranty claims, and service activities are all distorted if there is a flow of customers between channels. Second, accurate measurement often requires a large investment in information technology (IT).

In some cases, firms have been able to protect their traditional channel by charging consumers separately for the service and the product. For example, in the financial services industry, the price of providing investment advice was historically bundled with the price of a securities trade. The development of discount brokerage services on the Internet provided an opportunity for customers to avoid paying for investment advice by consulting with full service firms and then completing trades through discount brokerages. Full service firms such as Merrill Lynch responded by shifting customers toward fee-based accounts that compensated brokers for investment advice based on the percentage of assets managed rather than on the number of trades executed.

3. THE INTERNET LEADS TO COORDINATION PROBLEMS

Many of the tasks and decisions involved in managing a distribution channel require coordination (Buvik & John, 2000; Celly & Frazier, 1996; Roberts & Simester, 2004). For example, advertising is more effective if responses to customer inquiries are backed by trained salespeople and available inventory. Similarly, decisions regarding inventory levels and manufacturing schedules often depend on sales in each channel. We found many examples in which the Internet made coordination harder, leading to frictions and conflict within and among firms. These obstacles to coordination lead to several adverse outcomes.

3.1. Adverse Outcomes

In our surveys, firms reported greater difficulty scheduling, manufacturing, and planning inventories when they distributed through multiple channels. For example, the availability of both Internet and bricks-and-mortar bookstores has made it more difficult for publishers and retailers to balance inventories. WordsWorth is an across-the-board book discounter in Cambridge, MA. Founded in 1976, WordsWorth began using the Internet and its predecessors in the early 1980s when it set up a storefront on the CompuServe mall, selling books to a then-tiny online audience. In 1993, WordsWorth started an Internet channel. However, according to the general manager and webmaster of WordsWorth.com, this introduced new problems: "Our biggest challenge is stocking. Since both the physical and

Web stores share stock and we keep separate databases for legacy and security reasons, we have to make sure that our Web site allows for this.'' BestBuy provides another example. Recall that the company gives consumers the option of picking up merchandise ordered online in a local BestBuy store. In 2000, the inventory at BestBuy stores was managed locally and communication between the online retailer site and stores was poor. These coordination problems led to inventory shortages in retail stores when the in-store pickup option was introduced.

Multichannel firms also experience problems coordinating sales leads. Leads are not passed between channels, either because the channels compete or because there are no incentives to help the other channel. Even when there are incentives to share leads, we found that communication difficulties resulted in some customers receiving contacts from multiple channels, while other customers received no attention. IBM and Bose reported that customers are often confused about whether to purchase from the direct or indirect channel. In the automobile industry, coordination difficulties have led to slow response times on referrals. Manufacturer sites refer customers to dealers to obtain quotes for follow-up sales. However, according to Consumer Reports, the initial response from dealers was poor, with many customers receiving no response from dealers within two days of an online request.

Problems also arise when orders are received via one channel, but are fulfilled in another channel. April Cornell provides one such example. April Cornell carries a product line of silk-screened patterns, and operates bricks-and-mortar retail stores in upscale shopping districts of major metropolitan areas in North America. In 2000, the company's order fulfillment for its Internet site, Aprilcornell.com, relied on its retail stores. However, once an order was given to a store, the corporate office had no information regarding the status of the order, putting at risk the company's attempts to maintain service quality.

In another fulfillment example, Amtrak started selling tickets on its Web site in February 1997. In an effort to integrate ticketing across all channels, Amtrak's consumer Web site connected with the same Arrow reservation system that other Amtrak ticket channels used. However, because this system handled all Amtrak ticketing, it could not offer Internet-only date- or route-specific deals. Consequently, the system could not automatically verify whether a sale price generated from the company's Web site was accurate, requiring an Amtrak reservation agent to manually confirm the price before Arrow allowed the transaction to proceed. This lack of automation severely limited Amtrak's Internet-specific marketing options.

At Bose Corporation, the introduction of an Internet channel led to inconsistent marketing messages. Bose's Internet group was established as a separate business unit responsible for the Web site, including design, content, and Internet communication. The corporate communications group and the Internet group did not have established processes for exchanging ideas or discussing strategies, resulting in different messages being distributed through the various channels.

3.2. Underlying Issues

Our analysis of the interviews identified three underlying issues that hinder coordination when an Internet channel is introduced. First, developing an Internet channel introduces additional decision-makers and increases the dispersion of information. Firms generally use a combination of approaches to coordinate marketing activities. Some decisions are made *centrally*, while other decisions are *decentralized* by delegating authority to the separate channels (Laffont & Martimort, 1998). Centralized decision-making requires communication *up and down* from the central decision-maker to the channels, while decentralized decisions require communication *between* channels. The issues relating to an increase in communication tend to be exacerbated when firms outsource their Internet operations, so that communication must cross firm boundaries (Simester & Knez, 2002).

Second, the technical and operational challenges associated with the Internet are often different from the challenges that arise in other channels. As a result, specialized IT systems, languages, and cultures have developed to support each channel. This introduces a classic trade-off between *specialization* and *standardization* (Milgrom & Roberts, 1992; Litwack, 1993; Bolton & Dewatripont, 1994). While development of specialized languages and technologies makes it easier to solve problems specific to each channel, lack of standardization makes it harder to achieve coordination between channels.

A good example of IT differences was Citibank's effort to coordinate its home banking with its call center operations. Initially, Citibank's software for home banking was independent from the IT system used in its branches: any transaction made through a different channel would produce a confirmation number internal to that channel. When customers called customer service with complaints about failed transactions, they referred to the transaction number that the software generated. However, that number had no meaning in relation to other Citibank systems. Similarly, online traders

at Nomura Securities initially were unable to provide the same information to customers as offline traders due to differences in their information systems.

Language differences between channels are often a cause of technical production issues. Promotions Unlimited Corporation (PUC) is the largest supplier of promotional/seasonal items (Halloween, back-to-school products, party decorations) to independent retailers in the United States. In November 1999, PUC launched an online division, Goliath Falls (GFI), to extend its marketing reach and address the underlying needs of retailers beyond procurement. Managers at PUC and GFI reported that coordination was hindered by language differences between channels: while personnel in both channels used the same terms to describe the supply chain (SKU, cycle time), they used different languages for internal operating procedures. For example, GFI focused on server crashes, Web site usability, cognitive engineering, and click-through rates, terms which PUC executives did not understand.

A related problem occurred at the *Boston Globe*, where sales personnel for the print version sold lines and millimeters, while the online versions sold page views. These language differences were offered as one explanation for poor coordination between online and offline sales efforts. Language and cultural differences also extend to communications with customers. Bose and Gillette reported that the global availability of their Internet sites created problems because they had not translated the content into the languages of their international customers. This contrasts with the firms' traditional channels, in which customers and channel participants interact using local language and customs.

Third, conflict with the traditional channel can be a source of coordination problems. Recall that a common response for the traditional channel is to withhold information about customer preferences, customer identities, and inventory levels. This makes it harder for manufacturers to undertake product development and optimize pricing, promotion, and other marketing decisions. In 1995, Allaire Corporation, a leading provider of Web application development software, introduced its flagship product Cold Fusion Web Application Server to rapidly build, deploy, and manage Web applications. In addition to its direct sales channel, Allaire developed indirect channel partnerships with resellers, OEMs, system integrators, and other VARs. By 2000, almost 60% of Allaire's sales were from indirect channels. Because indirect partners had no incentive to pass customer information to Allaire, the company lacked knowledge of customer profiles, feedback, and usage, and could not contact its users to share information

about upgrades, patches, and security alerts. This hindered Allaire's product development activities and demand forecasts.

Bath Store International (BSI; name disguised to protect confidentiality), a global retailer of upscale personal care products, provides a similar example. BSI relied strongly on franchise stores that comprise approximately 40% of its U.S. retail stores. The company formed Bath Store Digital (BSD) to enable consumers to buy BSI products online. However, franchise stores had little motivation to work with BSD, as they feared that BSD would cannibalize their business by accessing consumers directly. This created inefficiencies because each channel had incomplete information about customers and their demand for BSI's products. Similar examples were found at Nomura Securities and BBO Brokerage, where traders and salespeople stopped providing information about customer preferences following the introduction of online trading.

3.3. Solutions

Solutions to the coordination problems described in this section fall into two categories:

1. Implement mechanisms that overcome barriers to communication.
2. Restructure to reduce the number of decision-makers and/or the dispersion of information.

The selection of an appropriate strategy depends on the answers to the following questions.

3.3.1. What Additional Information is Required to Improve Decision-Making?

A solution to most coordination problems can be found by providing better information to decision-makers. However, the changes required to achieve this depend on the organization. In some firms, coordination can be improved by centralizing more decisions, while in other organizations, less centralized decision-making is required. More centralized decision-making can facilitate coordination by reducing the number of decision-makers. In our interviews, Bose Corporation's Manager of Electronic Media speculated that moving the Internet group back under the corporate communications group would solve the inconsistencies in marketing messages between the Internet and traditional channel. Allaire provides another example of a firm benefiting from a more centralized structure. It created an account management position that oversees both the direct

and indirect sales operations for a particular region. This improved the coordination of sales activities across channels because the distribution of leads and allocation of effort was determined by a single authority.

In contrast, decentralizing decision-making ensures that decision-makers are closer to the customer, inventory, product, or manufacturing information required to make the correct decision. The advantages of a more decentralized structure are well illustrated by the decisions of J. Crew and Nordstrom to allow their Internet and traditional channels to maintain separate inventories and manage their own fulfillment. While this solution sacrificed firm-wide synergies, it overcame the need for cross-channel coordination.

Resolving the trade-off between centralization and decentralization depends on the type of information required to improve decision-making. If the current coordination problems arise because decision-makers are unsure about the decisions of other decision-makers, then a more centralized structure is required. Alternatively, a less centralized structure will help if decision-makers lack more functional information, such as customer, inventory, product, or manufacturing details.

3.3.2. Will Overall Performance Incentives Lead to Free-Riding?

We identified incentive conflicts as an important source of coordination failures (Sarin & Mahajan, 2001; Simester & Knez, 2002). Several firms were able to overcome these problems by redesigning their incentive systems. For example, when Merrill Lynch shifted customers toward fee-based accounts, brokers had less incentive to discourage clients from using Merrill's Internet trading service. In other cases, firms rewarded participants in both channels for any sales, irrespective of the channel in which the transactions occurred. This encouraged channel participants to increase overall performance by communicating relevant information accurately.

Unfortunately, incentives based on overall performance often result in a firm's compensating all channels for transactions contributed by only one channel. It may also lead to free-riding, under which employees in one channel rely on the efforts of another channel. Free-riding is more of a concern when the actions of the different channels are substitutes rather than complements. Evidence also suggests that free-riding is more likely to occur if employees in the separate channels have little regular interaction. Regular interaction allows participants in the different channels to monitor and sanction each other.

3.3.3. How Valuable is Specialization?

Rather than develop specialized languages and technologies to solve problems specific to each channel, several firms relied on increased standardization to simplify communication between Internet and traditional channels. For example, Amtrak described plans to reconfigure its Arrow system to allow it to confirm the appropriate final pricing for fares regardless of which channel produced the sale. Similarly, to solve the problem of misdirected customer calls relating to home banking transaction numbers, Citibank eliminated the confirmation number and gave consumers the option to receive a printed record similar to that for an ATM transaction. In these examples, the gains from standardization did not require either firm to forgo the benefits of specialization. Instead, the firms identified examples of specialization that hindered coordination and offered few inherent benefits.

3.3.4. Can Process Changes Reduce the Need for Communication?

The interviews revealed several opportunities to improve coordination by reducing the need for communication. Several firms were able to overcome coordination difficulties by rotating employees between channels. This strategy offers three advantages. First, communication is often easier, because employees share a common language. Second, there is less need for communication because employees share common expectations about the nature and timing of tasks. And third, employees are less likely to make decisions that help their channel at the expense of the other channel if they are about to transfer to the other channel. One company that applied this strategy was Staples, which encouraged employees to transfer internally between the online and traditional channels. Of course, job rotation is typically only available as a solution when the traditional and Internet channels are owned by the same firm.

Other examples include firms that developed alternative sources of information to overcome incentive conflicts or other barriers to communication. Allaire, the Web server software company, used the Internet to contact customers who purchase through its traditional channels. Consumers were invited to register products online and participate in special development communities on Allaire's password-restricted Web site. The registration process allowed Allaire to build a current customer list, even if its resellers refused to share customer information.

4. THE INTERNET DESTROYS TRADITIONAL SEGMENTATION CRITERIA

The use of multiple distribution channels is an important mechanism for targeting separate segments with different marketing offerings. A clothing retailer such as Banana Republic accesses many of its customers through its retail stores, while accessing other customers through its Internet site. The use of these two channels enables Banana Republic to satisfy both those customers who prefer to try on clothing before purchasing and those who do not have time to visit a retail store. Price and product offerings are varied across the channels in response to differences in the preferences of the separate segments.

The benefits of using the Internet as a segmentation mechanism can be undermined if customers use more than one channel. When customers are exposed to multiple channels, the attempt to differentiate will fail. This is not the only cost of maintaining more than one channel. Inconsistencies in product and price offerings tend to result in customer confusion and dissatisfaction. The ease with which customers can access information on the Internet makes these issues particularly relevant. Information often is publicly available and customers accessing Internet sites generally are anonymous.

4.1. Adverse Outcomes

The following two scenarios illustrate how problems can arise. Consider first a firm with a traditional retail store that has recently introduced an Internet channel. The need to maintain consistency between its Internet and traditional channels may prevent the firm from designing one set of product and price offerings for customer segments that purchase over the Internet and another set of offerings for those who purchase through the traditional store. J. Crew, a company that began in 1983 as a catalog-clothing retailer and opened its first store in 1989, exemplifies the problem. At the time of our interview, J. Crew had 86 retail stores and 42 outlet stores nationwide. When it started selling online in 1996, J. Crew offered promotions and discounts on its Internet site before offering them in catalogs and retail stores. This led to confusion among customers who used more than one channel. Consumers felt "cheated" if they purchased an item in a retail outlet, only to discover later that they could have purchased that same item online at a lower price.

This price differentiation problem was not limited to consumer markets. Many firms operating in the business-to-business space experienced similar problems. For example, Office Depot, the largest supplier of office products and services in North America, reported that many of its business customers complained when it charged different prices on the Internet than those it charged in its stores. Nor were inconsistencies in pricing strategies the only source of discord. Customer dissatisfaction and confusion were also evident with regard to discrepancies in return policies (Barnes and Noble, Staples), product selection (CVS, Toys R Us), lead times (Standard and Poor's), and packaging (Toys R Us). Barnes and Noble's online division, bn.com, initially did not allow consumers to return books at Barnes and Noble's retail locations. Customers naturally assumed that the two firms were actually one company and were confused by inconsistencies in the return policies. A similar problem occurred with the Internet site (Toys.com) of Toys R Us. Since Toys.com relied on Amazon.com's fulfillment operation, consumers received goods in Amazon packaging. This led to confusion about the origin of the merchandise. At Standard and Poor's, a Lexington, Massachusetts-based economic research firm, the different lead times between the company's CD-ROM and Internet channel confused customers who perceived inconsistencies between reports.

The second scenario involves firms that target different customer segments in their traditional channels. Consider a firm that maintains two retail stores, one in Region A and the other in Region B. Prior to the introduction of an Internet channel, the firm may charge different prices and offer different products in the two stores as long as customers in the two regions do not overlap. In an Internet channel, customer anonymity often makes it difficult to vary prices and products offered to customers in different regions. In this case, maintaining consistency between the Internet and traditional channels requires that the firm abandon its earlier strategy and instead offer the same prices and product assortments at its two retail stores. For this reason, the introduction of the Internet can make it more difficult to discriminate in traditional channels.

Consider Xerox, whose internally managed direct sales force organized accounts by geographic territories. The Xerox Internet site provided complete pricing information. However, this hindered the direct sales force's ability to vary prices between clients, reducing overall profit margins. Other firms that had difficulty maintaining domestic regional pricing policies include Staples, Verizon, and CVS.

The global reach of the Internet has led to related problems for firms that sell products internationally. Intellution, Inc. produced software designed to

integrate the automatic operations of industrial processes and machinery. Prior to the introduction of its Web site, international customers did not know that U.S. customers were paying less. Once the Web site was unveiled, international customers were able to see what prices U.S. customers were offered. Managers at Bose reported that they had faced a similar problem.

4.2. Underlying Issues

At the core of these problems lie two issues. First, consumers do not always consider targeted price discrimination a legitimate business practice.[2] While they are used to paying different prices for identical goods in some industries (airlines, for example), they find it ''unfair'' in many others (see Kahneman, Knetsch, & Thaler, 1986). Firms that attempt to charge multiple prices may provoke adverse customer reactions (Cooke, Meyvis, & Schwartz, 2001; Anderson & Simester, 2010). Recently, Apple was widely criticized for the pricing of its iPhone, while Amazon has also received criticism for charging different customers different prices for the same items (Wolverton, 2000). Not surprisingly, this problem is more common among firms that identify the association between their Internet and traditional channels using a common brand name. Customers are more likely to expect consistency between the channels if the same firm owns both channels.

The second problem is that targeted price discrimination is effective only if firms can associate individual customers with specific segments. When firms implement regional pricing policies, they segment customers on the basis of the retail outlet the customer uses. The Internet makes geography largely unobservable, which prevents firms from associating a customer with a specific location (Zettelmeyer, 2000).

4.3. Solutions

Firms have adopted a mixture of the following four solutions:

1. Abandon attempts to discriminate.
2. Limit customers' access to price and product information.
3. Increase product differentiation to make it harder to compare prices.
4. Use alternative discrimination mechanisms.

The choice of a solution depends on the answers to the following questions.

4.3.1. Is a Response Necessary?

With the emergence of Internet channels, many firms were concerned about customer reactions to price variation. However, none of the firms in our survey reported that they had systematically measured how customers react when they observe a product or price inconsistency. Nor were any firms planning a systematic investigation of this issue.

4.3.2. How Much is Gained by Targeting Separate Segments with Different Offerings?

The failure to measure whether a response is necessary is surprising given that many firms reported that they had taken steps to mitigate adverse customer reactions. These steps included abandoning attempts to price discriminate by maintaining consistent pricing across their retail store, catalog, and Internet channels. Examples include IBM, which reported plans for a uniform channel pricing policy, and Siemens, which implemented a consistent price policy for large corporate clients. Office Depot also reacted to customer complaints by creating a standardized pricing structure across its channels. In particular, Office Depot's business customers received a special ProCard procurement card that allowed them to obtain supplies from a retail store at a contracted Internet rate. Other examples include LL Bean and Toys R Us, which keep their online prices consistent with their store prices, and Verizon, which adopted a nationwide flat pricing strategy.

To support their claims that prices are consistent between channels, several firms promoted a price-matching policy. J. Crew matched any promotion price from its catalog or Internet site if a customer brought in proof of the promotion. Similarly, Nordstrom offered to match a lower price if a customer discovered a price discrepancy between channels. Firms also retreated from offering different products and maintaining different policies between channels. Siemens standardized its warranties between channels, while Staples changed its policy to ensure that products and return policies were consistent between channels.

Abandoning the practice of offering different products and prices to different customer segments resolves customer confusion or dissatisfaction, but this comes at a cost. In an ideal world, a firm would prefer to target different segments with different offerings. Maintaining the same offering is less profitable because it prevents the firms from tailoring their offerings to the preferences of the separate segments. The magnitude of this opportunity cost depends on the extent to which the preferences of the different segments vary. The greater the difference, the more costly it is to abandon a differentiated marketing mix.

4.3.3. Can Consumers Learn Price and Product Information from Third Parties?

Some firms have simply withdrawn product and price information from the Internet channel. For example, Xerox limited purchases through the Internet and directed customers to its traditional channel. Similarly, Horizon, a manufacturer of window coverings, tried to mitigate the impact of the Internet on its pricing policies by only allowing online retailers to sell lower-priced, commodity-type products. However, this strategy works only if product and pricing information is not available from third parties. Edmunds.com and Kelley's Blue Book provide such detailed pricing information that any attempt by car manufacturers to restrict access to product and price information would have little effect.

An alternative solution is to vary brands, model numbers, and product specifications. The resulting loss of price and product transparency makes it difficult for customers to compare this information, even in the presence of third-party information sources. Examples include Standard & Poor's, which anticipated that its DRI division's e-data product would help to resolve consistency questions by making it more difficult to compare prices between channels. Similarly, Ryobi, a manufacturer of power tools, created a proliferation of model numbers to service different customer segments.

4.3.4. Can Consumers be Asked to Identify Themselves by Name or Location?

Some firms have tried to preserve the benefits of segmentation by limiting access to information on their Internet sites in an attempt to minimize the overlap between segments. A common approach in the retail market is to require that customers enter their zip code before receiving price or inventory information. In the business market, several firms reported that they had developed corporate extranets that allow them to vary the information provided to specific accounts. Sylvania created MySylvania, a password-protected, invite-only extranet site that is customized to trigger customer-specific pricing and ordering information when customers log in. Other examples include Dell, Xerox, and the corporate computer dealer NECX.

4.3.5. Does the Internet Provide New Segmentation Criteria?

While the Internet destroys some segmentation criteria, it can also become the source of new ones. The Internet allows firms to segment consumers by their history. These strategies are possible only if consumers cannot easily acquire a different "personality," as Amazon.com's consumers did after they noticed that they were being charged higher prices than consumers who had just registered with Amazon.com.

5. CONCLUSIONS

In this chapter, we report the findings from a large-scale study comprising interviews with 165 managers at over 140 companies. We investigate the problems that firms confronted when introducing an Internet distribution channel and the solutions they pursued. The complexity of problems can easily lead to misinterpretations and inappropriate corrective action. We provide a structure to help anticipate and understand the challenges that firms can expect when introducing an Internet channel. In addition, we present a menu of alternatives to address challenges as they arise, and provide a series of questions to help identify which solutions are most appropriate.

A useful question that is not addressed directly in the preceding discussion is whether there are any firms for which none of these problems arise. Our interviews revealed three scenarios in which firms developed Internet channels without experiencing any of these problems. The first scenario involves firms that did not have a strong position in the traditional channel prior to developing their Internet channel. This includes new entrants who focus solely on the Internet market. The absence of a traditional channel overcomes the channel conflict problems that arise with a traditional channel. These firms do not need to maintain consistency in prices, products, or services across multiple channels and face few coordination difficulties due to the dispersion of information or decision-makers across channels. Measuring and compensating effort also is easier in this setting, without the need to measure externalities across different channels.

Carrier Corporation provides an insightful example of this scenario. Carrier manufactures residential and commercial air conditioning equipment. Although the company had a strong presence in many commercial and international markets, its market share in the U.S. residential market was relatively small. Most large retail chains did not sell its products, and the absence of a complete line of residential products also resulted in low penetration among independent dealers. Carrier had considerable success selling residential air conditioners direct to customers over the Internet. This success was due at least in part to the absence of competition. At the time of our interviews, Carrier was the only manufacturer selling direct over the Internet. Traditional retailers, who have well-established relationships with competing manufacturers, have prevented these manufacturers from developing their own Internet channels.

The second scenario involved firms that developed an Internet channel only to service niche markets that were poorly served by the traditional

channel. Examples include Gibson Guitars and The Gap. Gibson discontinued sales of its core guitar products on its Internet site in response to an adverse reaction from its traditional guitar retailers and distributors. However, it received little adverse reaction to sales of accessories on its site. Guitar accessories are typically low-margin products with many different variants, making it difficult for retailers to maintain a complete inventory. An Internet channel is ideally suited to selling small-volume items with many different variants. Consolidating national demand for each variant through a single warehouse is more efficient than maintaining complete inventories in dispersed locations. The Gap offers a similar example, with the Internet better suited to selling unusual color and size variants for which there are relatively low volumes. Note that these examples could be interpreted as an application of the first scenario, as the lack of problems can be explained at least in part by the absence of a well-established traditional channel for these niche products.

The third scenario involved firms that used the Internet to complement rather than substitute for the traditional channel. These include firms that do not sell on the Internet, but instead used the Internet to facilitate procurement, inventory management, and logistics for the traditional channel. These firms, together with their partners in the traditional channel, enjoyed the coordination benefits of improved communication without the problems associated with competition between the channels. In many respects, this scenario describes extensions to the traditional channel, rather than the introduction of a new channel. Because transactions do not occur on the Internet, there are no externalities affecting measurement and compensation, nor is any information provided to customers about prices or the availability of alternatives.

Our study offers insight into how firms dealt with the introduction of a new Internet channel. While our interviews and data are historic, many of the same issues continue to feature prominently in the academic literature and the business press. We hope that future research will build on the insights and findings from this study.

NOTES

1. The distinction between specific and nonspecific investments has received attention in the marketing channels literature (see, e.g., Heide & John, 1990; Dutta, Bergen, & John, 1994). More generally, the hold-up issue is closely related to issues of trust and commitment, which are also discussed; see Anderson and Weitz (1992),

Gundlach, Achrol, and Mentzer (1995), Frazier and Lassar (1996), Fein and Anderson (1997), and Jap and Ganesan (2000).

2. Targeted pricing is also sometime labeled "third-degree price discrimination" (see, e.g., Tirole, 1988).

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REFERRAL EQUITY AND REFERRAL MANAGEMENT: THE SUPPLIER FIRM'S PERSPECTIVE

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ABSTRACT

From the supplier firm's perspective, a referral is a recommendation from A (the referrer) to B (the potential customer) that B should, or should not, purchase from C (the supplier firm). Thus, as referrals are for *a specific supplier firm, they should be viewed as part of the supplier firm's marketing and sales activities. We recognize three types of referrals – customer-to-potential customer referrals, horizontal referrals, and supplier-initiated referrals – that have critical roles in a potential customer's purchase decision. We develop the concept of* referral equity *to capture the net effect of all referrals for a supplier firm in the market. We argue that supplier firms should view referral equity as a resource that has financial value to the firm as it affects the firm's cash flows and profits. We offer strategies firms can use to manage referrals and build their referral equity and suggest a research agenda.*

1. INTRODUCTION

If you're looking at your advertising or marketing as a means of 'pulling in' response to you, let's face it: the most believable form of contact will always be referrals. No question.

(Logullo, 2007, referral marketing consultant)

Business owners tell me every day that the way they generate the most new business is through referral marketing.

(Jantsch, 2007, marketing consultant)

Referrals generate business – this conventional wisdom seems incontrovertible, and raises an important question: How should a supplier firm manage its referrals? Consulting firms, such as Referral Marketing Solutions, uRefer, and Point of Reference, offer services to increase the supplier firm's customer base through referrals. Books on referral marketing, such as *Endless Referrals* (Burg, 2005), *Get More Referrals Now!* (Cates, 2004), and *The Referral of a Lifetime* (Templeton, 2005), outline how marketing managers and business owners should manage referrals to grow their business. For example, Burg (2005, p. 49) suggests asking for referrals from existing customers: "Joe, as far as you know, would any of them [in Joe's golf foursome] happen to need …?"

Yet these practical efforts, and more than half a century of academic research on word of mouth and interpersonal influence (e.g., Anderson, 1998; Arndt, 1967), offer little actual insight into what referrals really are or how supplier firms can manage them to achieve their marketing objectives. Our goal is to focus attention on the supplier firm's perspective of referrals. Conceptualizing referrals from the supplier firm's perspective has two implications. First, this perspective recognizes that supplier firms are not just spectators of the referral process but can manage it to improve their business results. Second, this perspective allows us to identify areas for research that would suggest related marketing strategies for managers.

We conceptualize referrals from the supplier firm's perspective in three steps. First, we define a referral as a recommendation from A (the referrer) to B (the potential customer), such that B should, or should not, purchase from C (the supplier firm). This definition specifies that a referral is *for* a specific supplier firm and can be positive or negative. For example, if Joe (the potential customer) is considering purchasing a cellular service, and Adam's (the referrer) recommendation influences him to purchase from AT&T, then Adam has given Joe a positive referral *for* AT&T (the supplier firm).

Second, we introduce three types of referrals: (1) customer-to-potential customer referrals, where the referrer is a customer of the supplier firm, for example, an iPhone user recommends to his friend to purchase an iPhone (Arndt, 1967); (2) horizontal referrals, where the referrer is not a customer of the supplier firm, for example, a contract lawyer refers her client to a lawyer who specializes in personal injury (Spurr, 1988); and (3) supplier-initiated referrals, where the supplier firm matches the referrer and a potential customer, as when SAS requests the U.S. Treasury Department to refer SAS to other government departments (Lee, 2008).

Third, we argue that because referrals affect the supplier firm's cash flows and profits, the supplier firm should view positive referrals as assets and negative referrals as liabilities. We thus conceptualize *referral equity* as the present value of the difference between the supplier firm's expected cash flow due to its referral assets and referral liabilities. Referral equity captures the net effect of all referrals on the supplier firm's customer acquisition, customer retention, and marketing costs.

We proceed as follows: In the next section (Section 2), we define a referral, and identify the three actors involved in a referral exchange. In Section 3, we review literature pertaining to the three types of referrals, and in Section 4, we conceptualize the role of referrals in potential customers' purchase decisions. In Sections 5 and 6, we define the referral equity of the supplier firm and suggest referral management strategies for supplier firms to build referral equity, and conclude in Section 7.

2. REFERRALS: A CONCEPTUALIZATION

Consider Joe who wants to purchase a cellular service. Joe asks his friend Adam for advice, and Adam recommends that Joe purchase AT&T's cellular service. Spurr (1988, p. 87) calls this exchange a referral for AT&T, defining a referral as "a recommendation from A to B, such that B should purchase services from C." However, Adam might recommend to Joe *not* to purchase from AT&T. And a referral could also be for a product, not only a service. Therefore, we modify Spurr's (1988) original definition of a referral as *a recommendation from A to B, such that B should, or should not, purchase from C* (see Fig. 1).

Our definition highlights three aspects of a referral. First, it includes three actors: the source of the referral – the referrer (A); the receiver of the referral, who is involved in the purchase decision – the potential customer (B); and the recipient of the referral, who provides the product or service to
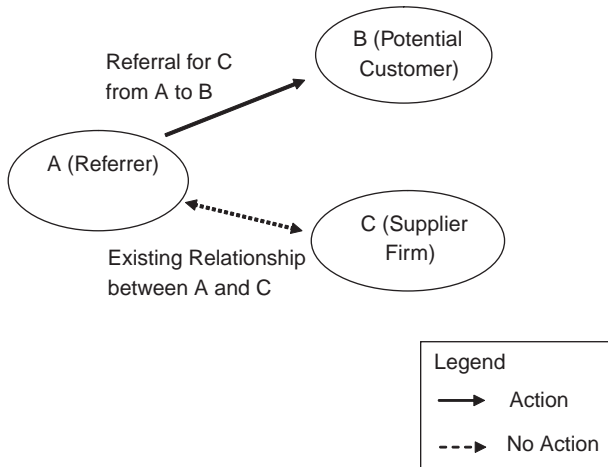
Fig. 1. Referral From Source A to Potential Customer B for Supplier Firm C.

the market – the supplier firm (C) (Gilly, Graham, Wolfinbarger, & Yale, 1998a; Spurr, 1988) (Fig. 1). Second, the definition highlights the role of referrals in marketing: to influence potential customers to purchase, or not, from the supplier firm.[1] Third, we recognize two attributes of a referral: the valence (negative or positive) and the intensity (strength of recommendation). A positive referral would influence the potential customer to purchase from the supplier firm, whereas a negative referral would do the opposite. Furthermore, a referrer can make a recommendation of varying strength to the potential customer – from ''superb product/service'' to ''was ok,'' for example. In summary, a referral is a one-to-one exchange between a referrer and a potential customer about purchasing from a specific supplier firm; it can be positive or negative, and can vary in its intensity.

As a referral is an exchange, the three actors each give something to receive something (Table 1). Referrers might be customers (existing or prior) of the supplier firm or product experts, and they provide potential customers with information about the supplier firm in their referral (Senecal & Nantel, 2004). One of the reasons customers act as referrers is to reduce post-decision dissonance, that is, doubts about whether they took the right decision (e.g., Engel, Kegerreis, & Blackwell, 1969; Richins & Bloch, 1986). Other reasons customers (or noncustomers) might act as referrers include the desire to gain attention or social status from potential customers (Gatignon & Robertson, 1985). Therefore, in a referral exchange, the

Table 1. Exchanges Between Actors in a Referral.

Actor	Gives (To)	Receives (From)
Referrer	Information about supplier firm (potential customer)	Social status and attention (potential customer)
Potential customer	Social status and attention (referrer)	Information related to supplier firm (referrer)
Supplier firm	Service/product (referrer)	Referral (referrer)

Note: Row 1 indicates that the referrer gives information about supplier firm to the potential customer, and gets social status and attention from the potential customer.

referrer provides information to the potential customer about the supplier firm and receives attention and enhanced social status from the potential customer (see row 1, Table 1).

From the supplier firm's perspective, potential customers are involved in the purchase of a product or service and want information about the supplier firm. They receive information from the referrer and provide attention to the referrer, which enhances the referrer's social status (see row 2, Table 1). Supplier firms receive the referral from the referrer in exchange for providing something to the market. Supplier firms could be firms that provide a product or service (e.g., Apple Inc.), professionals (e.g., lawyer), or a person (e.g., job seeker) (see row 3, Table 1).

Referrals represent one of the many sources of information potential customers may use to make better decisions[2] (Andreasen, 1968). As customers' judgments of the usefulness of advertising continue to decline (Keller & Berry, 2003), supplier firms should manage referrals as part of their communication process (Chen & Xie, 2005), and should recognize the different sources referrals can come from.

3. TYPES OF REFERRALS

Referrals for the supplier firm can come from both customers and non-customers; the supplier firm also might initiate referrals for itself. For example, a supplier firm could receive a referral from another supplier firm (horizontal referral), or the supplier firm could ask one of its existing customers to provide a referral to a potential customer (supplier-initiated referral). We define and review literature on all three types of referrals: customer-to-potential customer referrals (Section 3.1), horizontal referrals (Section 3.2), and supplier-initiated referrals (Section 3.3), summarized in Table 2.

Table 2. Types of Referrals.

Referral Type	Referrer	Potential Customer Known to Supplier Firm?	Referral Valence	Referral Initiated By	Examples of Positive Referrals
Customer-to-potential customer referrals	Customer	No	Positive or negative	Referrer or potential customer	Jane recommends to Elizabeth that Elizabeth purchase an iPhone from Apple
Horizontal referrals	Noncustomer	No	Positive or negative	Referrer or potential customer	A lawyer recommends a client to use services of another lawyer
Supplier-initiated referrals	Customer selected by supplier firm	Yes	Positive only	Supplier firm	Centra Software asks existing customer, Link Inc., to recommend potential customer, Aztec Inc., to purchase from Centra

Note: Row 1 indicates that in customer-to-potential customer referrals, the referrer is a customer of the supplier firm, the potential customer is not known to the supplier firm, the valence of the referral can be negative or positive, and the referral can be initiated by the referrer or the potential customer. In the example, Jane (the referrer) gives a positive referral to Elizabeth (the potential customer) for Apple's (the supplier firm) iPhone.

3.1. Customer-to-Potential Customer Referrals

Consider our initial example again – Joe asks his friend, Adam, for a recommendation for a cellular service and Adam gives Joe a positive referral for AT&T. Adam is either an existing or prior customer of AT&T, and Joe is a potential customer for AT&T. Such a referral exchange represents a customer-to-potential customer referral, in which the referrer and the potential customer are typically in each other's networks of family, friends, or acquaintances. Although AT&T should know that Adam is a current or prior customer, it likely cannot know about Joe and is unaware of the referral Adam provides to Joe. Furthermore, the valence of the referral can be negative or positive and either the referrer or the potential customer can initiate the referral exchange; Joe might seek information from Adam, whom he knows is an existing customer of AT&T, or Adam might offer information about AT&T to Joe (row 1, Table 2).

Marketing researchers have typically studied customer-to-potential customer referrals as "word of mouth." Arndt (1967) defined word of mouth as one-to-one exchange of information about a product or service from a user to a nonuser of the product. However, today, word of mouth is used to denote any information exchange concerning a product or service between consumers (Harrison-Walker, 2001). Thus, word of mouth encompasses both the roles of communication between customers – information flow, and interpersonal influence in a purchase situation. Customer-to-potential customer referrals focus only on interpersonal influence of the communication between customers and potential customers related to purchasing the product. Although word of mouth is now defined as any communication between customers, most of the research on word of mouth has measured word of mouth as the likelihood of a customer giving a recommendation (i.e., likelihood of a referral), and the influence of receiving a referral on potential customers' purchase (cf., Chevalier & Mayzlin, 2006; Godes & Mayzlin, 2004). Below, we review the literature on word of mouth pertinent to customer-to-potential customer referrals.

3.1.1. Antecedents of Customer-to-Potential Customer Referrals

Researchers have studied situations in which customers are likely to act as referrers, such as when they are satisfied with the supplier firm's product (e.g., Anderson, 1998) or have a propensity to communicate their experiences to others (e.g., Singh, 1990). The antecedents of customer-to-potential customer referrals thus consist of satisfaction (or dissatisfaction)

with the supplier firm's product/service, personal characteristics of the referrers, and product characteristics (see Table 3).

Researchers have consistently found that the higher the customers' satisfaction with a product or service, the greater the likelihood that customers will provide positive referrals for the supplier firm (e.g., Anderson, 1998; Bettencourt, 1997). This result has been replicated across multiple product categories, such as coffee (Holmes & Lett, 1977) and car dealerships (Swan & Oliver, 1989). Similarly, the higher the customers' dissatisfaction, the higher the likelihood that they will provide negative referrals for the supplier firm (Richins, 1983). However, Anderson (1998) finds that the effect of satisfaction and dissatisfaction on positive and negative referrals, respectively, is asymmetric, that is, customers exhibit a higher likelihood of providing negative referrals when they are dissatisfied than providing positive referrals when they are satisfied. Researchers have studied numerous antecedents of customer-to-potential customer referrals other than (dis)satisfaction with the supplier firm, including the cultural background of the referrer (Gilly, Money, & Graham, 1998b), the referrer's involvement with the brand (Carroll & Ahuvia, 2006), and others (Table 3).

3.1.2. Consequences of Customer-to-Potential Customer Referrals

Most researchers have taken the potential customer's perspective when studying the consequences of customer-to-potential customer referrals. Zeithaml, Berry, and Parasuraman (1993) find that customer-to-potential customer referrals shape potential customers' expectations. Sheth (1971) and Day (1971) find that referrals have a greater influence on potential customers than does advertising in the purchase of low-risk innovations. This result on relative influence has received empirical support in multiple contexts, including new movies (Still, Barnes, & Kooyman, 1984), consumer services (Murray, 1991), and high-risk innovations, such as mental health services (Speer, Williams, West, & Dupree, 1991). Furthermore, negative referrals have a stronger influence on potential customers' purchase decisions than do positive referrals. This asymmetric effect occurs because people pay more attention to negative information than to positive information, so potential customers grant more importance to negative referrals than to positive ones (Fiske & Taylor, 1991).

Research on customer-to-potential customer referrals in business-to-business (B-to-B) markets is inconclusive. Webster (1970) finds that customer-to-potential customer referrals between firms are infrequent and have the most influence in the initial stages of the purchase process, whereas Martilla (1971) finds that they predominantly influence potential customers

Table 3. Summary of Literature on Antecedents of Customer-to-Potential Customer Referrals.

	Antecedents Studied	Mediators/Moderators Studied	Representative Papers
Satisfaction or dissatisfaction	Satisfaction and dissatisfaction with a product/service; (dis)satisfaction with a company's recovery efforts	Cross-cultural differences; perceived quality; commitment; anger; effect; strength of tie; attitude toward complaining	Richins (1983), Anderson (1998), Bettencourt (1997), Bitner (1990), Grace (2007)
Personal characteristics	Deal-proneness; cultural background; expertise; consumer's propensity; similarity between people; sophistication; perceived justice; embarrassment felt; self-confidence	Motivation; size of incentive; consumer knowledge; situational factors; value of firm's offerings	Singh (1990), Lau and Ng (2001), Walsh, Gwinner, and Swanson (2004), Gruen, Osmonbekov, and Czaplewski (2007)
Product-related	Product involvement; industry characteristics; brand loyalty; company size; service quality	Hedonic or utilitarian products; satisfaction; individual characteristics	Singh (1990), File, Cermak, and Prince (1994), Brady and Robertson (2001), Carroll and Ahuvia (2006)

in the later stages of the purchase process. Most subsequent research has focused on internal information sources and the use of marketing consultants (e.g., Bunn & Clopton, 1993; Moriarty & Spekman, 1984), without considering customer-to-potential customer referrals.

3.2. Horizontal Referrals

Consider Beth who goes to her physician Dr. Smith for an annual health check. Dr. Smith notices that Beth's heartbeat is irregular and recommends that she see a heart specialist, specifically, Dr. Howard. In this case, Dr. Smith has given Beth a positive referral for Dr. Howard; however, Dr. Smith is not a customer of Dr. Howard, and both represent suppliers in the medical industry. Such a referral, in which the referrer is another supplier firm (product or service provider), is a *horizontal referral* (Arbatskaya & Konishi, 2006).

   In horizontal referrals, potential customers are usually the referrer's potential or existing customers (row 2, Table 2); in our example, Beth is Dr. Smith's existing customer. The valence of horizontal referrals again can be positive or negative; Dr. Smith (the referrer) might recommend that Beth should *not* see Dr. Howard (the supplier firm). The referral can initiate with either side of the referrer – potential customer dyad; Beth might ask Dr. Smith to recommend a specialist, or Dr. Smith might offer the information himself. Further, Dr. Howard is unlikely to know about Beth, her problem, or the referral exchange, at least until Beth makes an appointment (row 2, Table 2).

   Horizontal referrals are most prevalent in industries in which potential customers must undergo a costly search to learn about available products, their characteristics, and their quality (Spurr, 1987). For example, potential customers know less about the quality of a particular lawyer than do other lawyers, and lawyers often gain business through positive referrals from other lawyers (Garicano & Santos, 2004). In consumer markets, a salesperson at Best Buy might recommend that you buy a camera lens unavailable at the store from Amazon.com. Reingen and Kernan (1986) find that a piano tuner (the supplier firm) in their study receives positive referrals from music stores. Horizontal referrals also prevail in industries in which potential customers do not choose goods and services directly but use another supplier firm as a proxy decision maker (Pauly, 1979). For example, patients depend on a generalist doctor (the referrer) to decide which

specialist medical services they need, and which specialist doctor to go to (the supplier firm).

Regardless of the industry, the referrer determines whether the supplier firm offers the solution that the potential customer needs and provides a referral. Thus, horizontal referrals reduce potential customers' search costs and should lead potential customers to an appropriate supplier who can address their problem. For example, Spurr (1988) finds that through horizontal referrals in legal trials, lawyers of higher quality receive trials with claims of greater intrinsic value.

Our overview suggests that researchers have primarily studied positive rather than negative horizontal referrals. Further, our understanding of the influence of horizontal referrals on potential customers' purchase decision and referrers' motivation to give horizontal referrals for supplier firms is limited.

3.3. Supplier-Initiated Referrals

Consider a firm, Axxess Inc., that is planning to purchase a software solution and is evaluating a supplier firm, Centra Software. Centra (the supplier firm) can ask an existing customer, Link Inc. (the referrer), to give a referral for Centra to Axxess (the potential customer). In this example, the supplier firm has initiated the referral for itself, and we call this type of referral a "supplier-initiated referral." In this referral, the supplier firm knows both the existing and the potential customers, as well as the likelihood of a referral exchange. Because it is unlikely that the supplier firm solicits a customer that might give a negative referral, the valence of a supplier-initiated referral should be positive (row 3, Table 2).

The practice of supplier-initiated referrals is prevalent in business markets in which supplier firms sell complex products to meet specific customer needs (Godes et al., 2005; Salminen & Möller, 2006). Kumar, Petersen, and Leone (2009) study the influence of these referrals on potential customers' purchase decisions in B-to-B markets and find that the referral's influence depends on (1) the referrer's characteristics (e.g., size, industry), (2) the referrer's transaction characteristics (e.g., how much and how often they purchase), and (3) referral characteristics (e.g., form of reference, similarity of referrer and potential customer).

The limited research on supplier-initiated referrals, as well as the difference in each actor's perspective in supplier-initiated referrals versus customer-to-potential customer referrals or horizontal referrals, provides

significant opportunities for research. For example, what are the motiva-
tions of an existing customer to agree to be a referrer? Will the potential
customer discount the referral because the supplier firm chose the referrer?
From the supplier firm's perspective, how can supplier firms maximize the
benefits of a supplier-initiated referral?

Each of the three referral types – customer-to-potential customer
referrals, horizontal referrals, and supplier-initiated referrals – can help
supplier firms achieve their marketing objectives. To understand how
supplier firms should manage referrals, we must first address how referrals
influence potential customers' purchase decision.

4. ROLE OF REFERRALS IN POTENTIAL CUSTOMERS' PURCHASE DECISION

> Whenever there is uncertainty, there is usually the possibility of reducing it by the
> acquisition of information.
>
> (Arrow, 1973, p. 3)

Consider a purchase situation in which the potential customer has
observed price and quality that can be observed prior to experiencing or
owning the product. However, the potential customer remains uncertain
about the product's quality or the supplier firm's ability to deliver the
product according to his or her expectations. This purchase uncertainty
increases when there is a degree of irreversibility concerning the product or a
time lag in ascertaining the product's quality. For example, imagine Jim, who
owns a tool shop and needs to purchase a complex machine. If the machine
proves unsatisfactory, such that Jim must sell the (used) machine, he suffers
an economic loss, because second-hand machine prices are lower than new
machine prices. He also loses the time and money required to buy and test
the machine (Arrow, 1973). To reduce purchase uncertainty, potential
customers are likely to search for external information through multiple
methods, such as, supplier firm–controlled information (e.g., advertising,
product brochures), ratings from third-party independent organizations (e.g.,
JD Power, Consumer Reports), direct inspections or trials, and referrals.

Researchers generally view the role of referrals as reducing potential
customers' perceived purchase uncertainty (e.g., Arrow, 1973; Roberts &
Urban, 1988). However, this view ignores the potential effect of conflicting
referrals on purchase uncertainty. Paese and Sniezek (1991) find that
conflicting information reduces confidence in decisions, such that if
potential customers receive either conflicting information from multiple

referrals or a mix of positive and negative referrals, referrals likely increase, not decrease, their purchase uncertainty. Nevertheless, potential customers' *purpose* in seeking information through referrals is to reduce their purchase uncertainty, so we take this purpose into account in our discussion.

We conceptualize the role of referrals in potential customers' information search in three dimensions. The first dimension refers to the *nature of the information search through referrals*. Bettman (1979) posits that potential customers first filter available alternatives using relatively simple criteria and then undertake detailed analyses of the resulting reduced set. This conceptualization aligns with Rees's (1966, p. 560) description of extensive and intensive search: "a buyer can search at the extensive margin by getting a quotation from one more seller. He can search at the intensive margin by getting additional information concerning an offer already received." The second dimension refers to the *referral type* (customer-to-potential customer referrals, horizontal referrals, and supplier-initiated referrals) through which potential customers access information. And, the third dimension refers to the *influence of a referral* on potential customers' purchase decision.

We argue that potential customers' external information search through referrals depends on their (1) decision stages (Section 4.1) and (2) purchase situation (Section 4.2). Here we provide the conceptual development, and in the appendix we present illustrative propositions for the role of referrals in potential customers' purchase decision.

4.1. Decision Stages

Most potential customers proceed through (at least) four stages in their decision process: problem recognition, creation of awareness set, creation of consideration set, and choice[3] (Fig. 2). In the first stage, they recognize a problem that requires a purchase to solve. In the second stage, potential customers access their memory to create the awareness set, which consists of all alternatives in the market of which the potential customer is aware (Shocker, Ben-Akiva, Boccara, & Nedungadi, 1991). By the second stage, potential customers have not conducted an external information search, so referrals do not play a role.

In the third stage, potential customers purposefully create a consideration set of product alternatives that are likely to solve their problem (Shocker et al., 1991). To do so, potential customers must search for additional supplier firms, and evaluate all considered alternatives. Therefore, potential customers likely conduct extensive external information search through
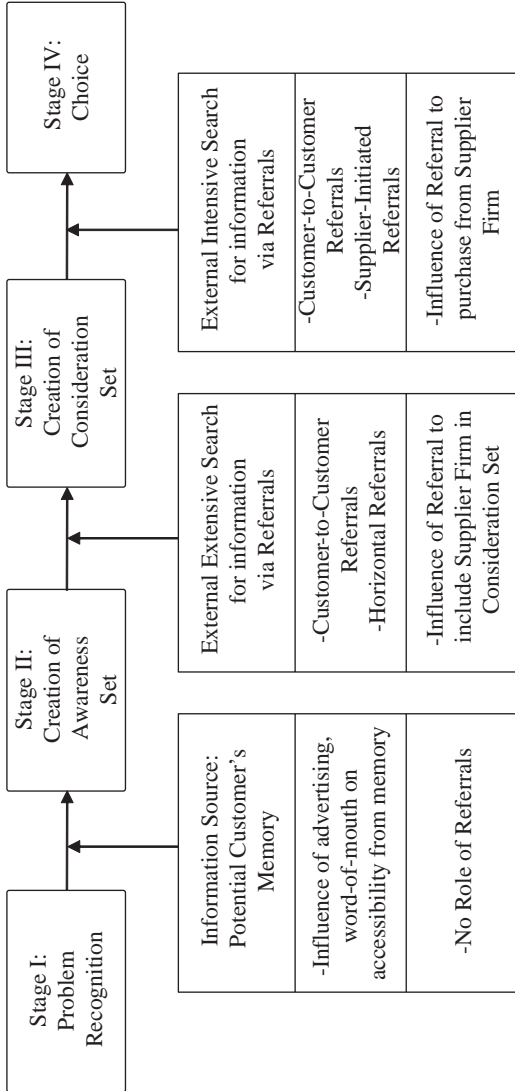
Fig. 2. Role of Referrals in Potential Customer's Decision Process. *Note:* There are multiple ways in which potential customers receive and search for information about the supplier firm (e.g., advertising, trial). This figure highlights the role of referrals only in providing information about the supplier firm to the potential customer.

referrals (Fig. 2). In the fourth stage, choice, potential customers choose a supplier firm from the consideration set, which prompts them to seek additional information about each supplier firm by conducting an intensive information search through referrals (Rees, 1966).

4.2. Purchase Situation

Potential customers' external information search through referrals depends not only on the decision stage of the purchase process, but also on factors that differentiate one purchase decision from another, that is, product characteristics, purchase situation, supplier firm characteristics, referral attributes, and referrer characteristics (Fig. 3).

4.2.1. Product Characteristics
Product characteristics might affect potential customers' external information search in two generic situations. In the first, potential customers have difficulty understanding what a product does or how it works. This situation typically arises when innovations (e.g., digital video recorders) are early in their life cycle (i.e., launch and growth stages). Potential customers' purchase uncertainty should be higher in the earlier stages than in the later stages of the product life cycle (i.e., maturity and decline stages), when potential customers have become familiar with the product (Tellis & Fornell, 1988). Thus, the product's life cycle stage should influence the likelihood of potential customers' information search through referrals.

In the second situation, potential customers may not be able to evaluate product quality before, or even after, purchase, as is the case for experience products (e.g., cruises, restaurants), and credence products (e.g., automobile services, financial investments), respectively. In contrast, potential customers can evaluate the quality of search products prior to purchase (e.g., books, furniture) (Darby & Karni, 1973; Nelson, 1970). Because potential consumers cannot ascertain the quality before purchase, they likely perceive higher purchase uncertainty for experience and credence products than for search products. Therefore, the likelihood of potential customers' information search through referrals depends on the product type: experience, credence, or search.

4.2.2. Potential Customer's Perceived Purchase Situation
The characteristics of the potential customers' purchase situation (prior knowledge, involvement, and complexity) likely influence their external information search (Dowling & Staelin, 1994).
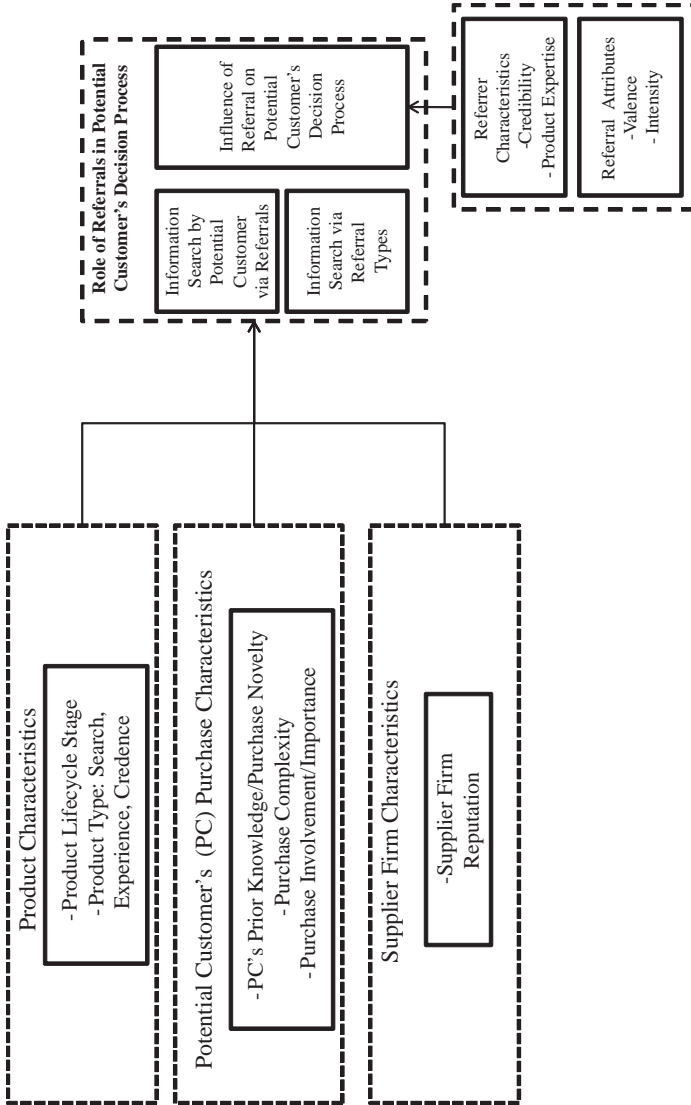
Fig. 3.   Role of Referrals in Marketing: Potential Customer's Purchase Decision.

The amount of knowledge potential customers have prior to the start of the purchase process affects the amount and nature of information search they undertake (Brucks, 1985). Because potential customers' prior knowledge (or purchase novelty in B-to-B markets) affects purchase uncertainty (McQuiston, 1989), the likelihood of their information search through referrals depends on their prior knowledge.

Purchase complexity leads potential customers to perceive external information search as difficult and expensive (Schmidt & Spreng, 1996). Herr, Kardes, and Kim (1991) show that potential customers are more likely to understand and remember information they gained from referrals than from sources such as independent reports. Thus, referrals reduce the perceived effort and the cost of acquiring external information. Therefore, the likelihood of potential customers' information search through referrals should depend on their perception of purchase complexity.

Potential customers' involvement in the purchase decision (or purchase importance) positively influences their perceptions of risk associated with the purchase (Webster & Wind, 1972). Therefore, potential consumers highly involved in the purchase decision are likely to search for external information about the purchase (e.g., Celsi & Olson, 1988; Hunter, Bunn, & Perreault, 2006). Thus, the likelihood of information search through referrals should depend on potential customers' purchase involvement.

4.2.3. Supplier Firm Characteristics
Information asymmetry between potential customers and the supplier firm causes potential customers to believe the supplier firm is attempting to sell products or services it does not possess (Stigler, 1961). Consider automobile services: Many potential customers do not understand the service offered, and the service shop (i.e., supplier firm) has an incentive to misrepresent the service required. In this scenario, potential consumers often prefer automotive service shops for which they have received positive referrals (Arrow, 1973). In the absence of previous experience with the supplier firm, potential customers also must rely on the supplier firm's reputation as a signal (Shapiro, 1983), and a stronger reputation provides a signal that reduces potential customers' purchase uncertainty. Therefore, the likelihood of potential customers' information search through referrals should depend on the supplier firm's reputation.

4.2.4. Referral Attributes
We expect that the two attributes of a referral – valence and intensity – also affect the role of referrals in potential customers' purchase decision.

As potential customers pay more attention to negative information than positive information (Fiske & Taylor, 1991), the referral's valence (negative or positive) should affect the referral's influence on the potential customer. Further, the referral's intensity (how strongly the referrer gives the recommendation) should also affect how much influence the referral has on potential customers' purchase decision (Fig. 3).

4.2.5. Referrer Characteristics

Other than the purchase and supplier firm characteristics, the referrer's characteristics also affect the role of referrals in potential customers' purchase decision, specifically the referral's influence on the potential customer. Gilly and colleagues (1998a) find that the referrer's credibility and product expertise affect the referral's influence on potential customers' purchase decision (Fig. 3).

Thus, referrals influence a potential customer's decision to purchase from the supplier firm. With a positive referral, the supplier firm might gain the sale and the associated expected cash flow. With a negative referral, the supplier firm might lose the sale and the associated expected cash flow. We argue that researchers and managers should study and assess the aggregate effect of all referrals for the supplier firm.

5. REFERRAL EQUITY: CONCEPTUALIZATION

Ebay is one e-commerce leader that is reaping the benefits of referrals from loyal customers. More than half its customers are referrals. "If you just do the math off our quarterly financial filings," CEO Meg Whitman recently told the Wall Street Journal, "you can see that we're spending less than $10 to acquire each new customer. The reason is that we are being driven by word of mouth [referrals]."

(Reichheld & Schefter, 2000, p. 107)

Almost half of those surveyed, 48%, reported they have avoided a store in the past because of someone else's negative experience.

(Knowledge @ Wharton, 2005)

Ebay's case highlights two effects that positive referrals have on a supplier firm – new customer acquisitions and reduced costs for customer acquisitions. Chevalier and Mayzlin (2006) also find that an increase in a book's positive online reviews increases the books' sales at Amazon.com and Barnesandnoble.com. Knowledge @ Wharton's (2006) summary of a retail dissatisfaction study shows that negative referrals are likely to have the opposite effect – reduced customer acquisitions. We argue that supplier

firms should focus on the effect of all referrals for the supplier firm in the market, and manage them as assets and liabilities that affect its cash flow. We model the net effect of all referrals for the supplier firm as the supplier firm's *referral equity* (Section 5.1), which we define as the present value of the difference between the supplier firm's expected cash flow due to its referral assets (Section 5.2) and referral liabilities (Section 5.3).

5.1. Referral Equity

The equity of a firm is the difference between its assets and liabilities. An asset is an "item with value owned by the firm which can be used to generate additional value or provide liquidity," such as property, plants, and equipment (Banks, 2005, p. 18). Liabilities are "legal obligations to make a payment," such operating expenses and debt (Banks, 2005, p. 207). Assets and liabilities need to be "accounted so that the entity's (i.e., firm's) timing and amount of cash flow can be determined" (Libby, Libby, & Short, 2005, p. 53). Srivastava, Shervani, and Fahey (1998) outlined how marketing-based assets, such as brand equity and channel relationships, can enhance the amount and timing of a firm's cash flow. We build on this stream of research to outline how referrals can be considered as intangible assets, and take it further by considering how referrals can be considered as intangible liabilities.

Intangible assets, such as trademarks, brand names, and firm's goodwill, "are factors of production or specialized resources that allow the supplier firm to earn cash (or profits) beyond the returns on its tangible assets" (Konar & Cohen, 2001, p. 282). Positive referrals should influence potential customers to purchase from the supplier firm, and thus, increase the supplier firm's expected sales, and reduce its customer acquisition costs. Because positive referrals increase the expected cash flow to the supplier firm from its tangible assets (e.g., products), we consider positive referrals an intangible asset of the supplier firm.

Intangible liabilities detract from the profits that a supplier firm can earn from its tangible assets. For example, a lawsuit against a supplier firm could increase potential customers' mistrust of the company and reduce sales; thus, the lawsuit is an intangible liability for the supplier firm (Konar & Cohen, 2001). Negative referrals influence potential customers not to purchase from the supplier firm, and thus, reduce the supplier firm's expected sales, and increase the supplier firm's customer acquisition costs. Therefore, we consider negative referrals an intangible liability of the supplier firm.

We define referral equity as the present value of the difference between the supplier firm's expected cash flow due to its referral assets and referral liabilities. Referral assets can generate positive cash flow by (1) increasing the supplier firm's expected sales and (2) reducing customer acquisition and customer retention costs. Referral liabilities can reduce cash flow by (1) reducing supplier firm's expected sales, (2) increasing customer acquisition and customer retention costs, and (3) increasing other marketing costs such as costs associated with referral programs.

We express referral equity of supplier firm j as:

$$\text{Referral equity}_j = (\text{Referral assets})_j - (\text{Referral liabilities})_j \qquad (1)$$

5.2. Referral Assets

We define referral assets as the present value of the supplier firm's positive cash flow due to referrals for the supplier firm:

$$\text{Referral assets}_j = \text{PV}_t(\Delta_{+\text{REF}}[E(\text{Sale}_j)], \Delta_{+\text{REF}}[\text{Marketing costs}_j]) \qquad (2)$$

where PV_t is the present value of cash flow at time t, $E(\text{Sale}_j)$ the monetary value of supplier firm j's expected sales, Marketing costs the supplier firm j's marketing expenditure, and $\Delta_{+\text{REF}}[\cdot]$ an operator indicating the change due to positive referrals for the supplier firm, where the subscript '+REF' indicates the effect of only positive referrals.

As we are elaborating on referral assets, we account for the *increase* in supplier firm's cash flow due to referrals. Therefore, $\Delta_{+\text{REF}}[E(\text{Sale}_j)]$ accounts for the *increase* in supplier firm j's expected sales due to positive referrals for supplier firm j, and $\Delta_{+\text{REF}}[\text{Marketing costs}_j]$ accounts for the *reduction in marketing expenditures* due to positive referrals. In Fig. 4, we provide a graphical representation of referral assets.

5.2.1. Effect of Positive Referrals on Expected Sales
We express the supplier firm j's expected sale to customer i (existing or potential) as:

$$E(\text{Sale}_{ij}) = L(\text{Purchase by customer}_{ij}) \times \text{Sale value}_{ij} \qquad (3)$$

where $L(\text{Purchase by customer}_{ij})$ is the likelihood that customer i will purchase from supplier firm j and Sale value$_{ij}$ the monetary value of the sale (e.g., in US$) the supplier firm j expects to earn from customer i.
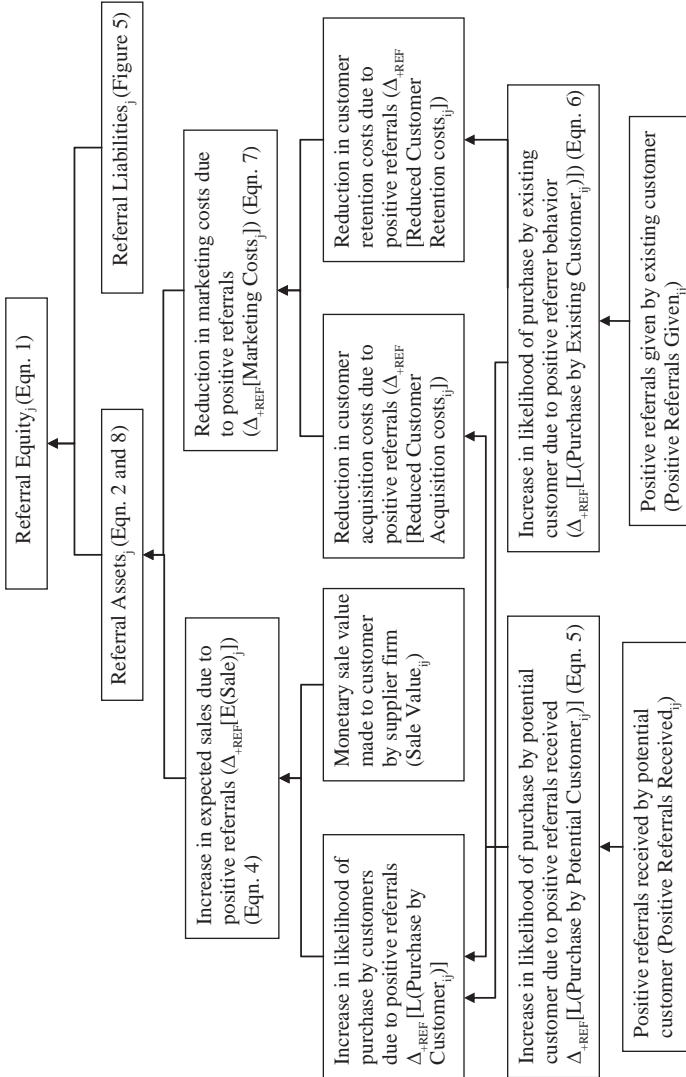
Referral Equity$_j$ (Eqn. 1)

Referral Liabilities$_j$ (Figure 5)

Referral Assets$_j$ (Eqn. 2 and 8)

Reduction in marketing costs due to positive referrals (Δ_{+REF}[Marketing Costs$_j$]) (Eqn. 7)

Reduction in customer retention costs due to positive referrals (Δ_{+REF} [Reduced Customer Retention costs$_{ij}$])

Reduction in customer acquisition costs due to positive referrals (Δ_{+REF} [Reduced Customer Acquisition costs$_{ij}$])

Increase in likelihood of purchase by existing customer due to positive referrer behavior (Δ_{+REF}[L(Purchase by Existing Customer$_{ij}$)]) (Eqn. 6)

Positive referrals given by existing customer (Positive Referrals Given$_{ij}$)

Increase in expected sales due to positive referrals (Δ_{+REF}[E(Sale)$_j$]) (Eqn. 4)

Monetary sale value made to customer by supplier firm (Sale Value$_{ij}$)

Increase in likelihood of purchase by potential customer due to positive referrals received Δ_{+REF}[L(Purchase by Potential Customer$_{ij}$)] (Eqn. 5)

Increase in likelihood of purchase by customers due to positive referrals Δ_{+REF}[L(Purchase by Customer$_{ij}$)]

Positive referrals received by potential customer (Positive Referrals Received$_{ij}$)

Fig. 4. Referral Assets of the Supplier Firm: Graphical Representation.

Customer i's likelihood of purchase from supplier firm j (L(Purchase by customer$_{ij}$)) depends on price and the information received from sources such as media, independent organizations, and referrals. We isolate the effect of positive referrals on supplier firm j's expected sale to customer i:

$$\Delta_{+\text{REF}}[E(\text{Sale}_{ij})] = \Delta_{+\text{REF}}[L(\text{Purchase by customer}_{ij})] \times \text{Sale value}_{ij} \quad (4)$$

where $\Delta_{+\text{REF}}[L$(Purchase by customer$_{ij}$)] is the increase in customer i's likelihood of purchase from supplier firm j due to positive referrals.

The supplier firm's expected sales come from both new (i.e., potential) and existing customers. Positive referrals increase the potential customer i's likelihood of purchase from supplier firm j (Murray, 1991; Nelson, 1970). We consider potential customer i's likelihood of purchase without receiving a referral for supplier firm j as the base and express the effect of positive referrals on the likelihood of purchase as:

$$\Delta_{+\text{REF}}[L(\text{Purchase by potential customer}_{ij})] = f_1(\text{Positive referrals received}_{ij})$$
$$(5)$$

where $\Delta_{+\text{REF}}[L$(Purchase by potential customer$_{ij}$)] is the increase in potential customer i's likelihood of purchase from supplier firm j due to positive referrals and Positive referrals received$_{ij}$ indicates the positive referrals received by potential customer i for the supplier firm j.

A referral exchange also affects existing customers' likelihood of purchase. When customers give positive referrals to potential customers, they attribute their satisfaction to the supplier firm and thus are likely to repurchase. If we use the likelihood of purchase if the existing customer gave a referral for supplier firm j as the base, the positive referral should increase the existing customer i's likelihood of purchase. Therefore:

$$\Delta_{+\text{REF}}[L(\text{Purchase by existing customer}_{ij})] = f_2(\text{Positive referral behavior}_{ij})$$
$$(6)$$

where $\Delta_{+\text{REF}}[L$(Purchase by existing customer$_{ij}$)] is the increase in existing customer i's likelihood of purchase from supplier firm j due to positive referrals and Positive referral behavior$_{ij}$ indicates that customer i gives positive referral(s) for supplier firm j.

5.2.2. Effect of Positive Referrals on Marketing Costs

Reichheld and Schefter (2000) argue that positive referrals can increase a supplier firm's cash flow not only by increasing likelihood of sales, but also

by reducing the cost of acquiring potential customers. Say Ethel gives a positive referral for the supplier firm to her friend John, and John decides to purchase from the supplier firm. Ethel has saved customer acquisition costs for the supplier firm, which did not expend any direct marketing effort to acquire John as a customer (Kumar, Petersen, & Leone, 2007). Because positive referrals also influence existing customers to repurchase from the supplier firm, they similarly reduce the supplier firm's customer retention costs. Therefore, we can express reduced marketing costs due to positive referrals that contribute to the supplier firm's referral assets (Eq. (2)) as:

$$
\begin{aligned}
\Delta_{+\mathrm{REF}}&[\text{Marketing costs}_j] \\
&= \sum_i (\Delta_{+\mathrm{REF}}[\text{Reduction in customer acquisition costs}_{ij}] \\
&\quad + \Delta_{+\mathrm{REF}}[\text{Reduction in customer retention costs}_{ij}])
\end{aligned} \tag{7}
$$

where Σ_i indicates the summation over all customers i from $1, \dots, n$, $\Delta_{+\mathrm{REF}}[\text{Reduction in customer acquisition costs}_{ij}]$ the reduction in costs for acquiring potential customer i due to positive referrals received for supplier firm j, and $\Delta_{+\mathrm{REF}}[\text{Reduction in customer retention costs}_{ij}]$ the reduction in costs for retaining existing customer i due to positive referrals given for supplier firm j.

Substituting Eqs. (4) and (7) into Eq. (2), we have:

$$
\begin{aligned}
\text{Referral assets}_j = \mathrm{PV}_t \Big(&\sum_i (\Delta_{+\mathrm{REF}}[L(\text{Purchase by customer}_{ij})] \times \text{Sale value}_{ij}), \\
&\sum_i (\Delta_{+\mathrm{REF}}[\text{Reduction in customer acquisition costs}] \\
&+ \Delta_{+\mathrm{REF}}[\text{Reduction in customer retention costs}_{ij}]) \Big)
\end{aligned} \tag{8}
$$

5.3. Referral Liabilities

We define referral liabilities as the present value of the supplier firm's negative cash flow due to referrals for the supplier firm:

$$
\text{Referral liabilities}_j = \mathrm{PV}_t(\Delta_{-\mathrm{REF}}[E(\text{Sale}_j)], \Delta_{\mathrm{REF}}[\text{Marketing costs}_j]) \tag{9}
$$

where $\Delta_{-\mathrm{REF}}[\cdot]$ is an operator that indicates the change due to negative referrals for the supplier firm, where the subscript "$-\mathrm{REF}$" indicates the

effect of only negative referrals, and $\Delta_{REF}[\cdot]$ an operator that indicates the change due to positive and negative referrals for the supplier firm, where the subscript ''REF'' indicates the effect of either positive or negative referrals, or both.

As we are elaborating on referral liabilities, we account for the *reduction* in supplier firm's cash flow due to referrals. Therefore, $\Delta_{-REF}[E(Sale_j)]$ accounts for the *reduction* in supplier firm j's expected sales due to *negative* referrals, and $\Delta_{REF}[Marketing\ costs_j]$ accounts for the *increase* in supplier firm j's marketing expenditures due to *positive or negative referrals*. In Fig. 5, we provide a graphical representation of referral liabilities.

5.3.1. Effect of Negative Referrals on Expected Sales

From Eq. (3), we can isolate the effect of negative referrals on customer i's likelihood of purchase and the subsequent effect on supplier firm j's expected sale:

$$\Delta_{-REF}[E(Sale_{ij})] = \Delta_{-REF}[L(Purchase\ by\ customer_{ij})] \times Sale\ value_{ij} \quad (10)$$

where $\Delta_{-REF}[L(Purchase\ by\ customer_{ij})]$ is the reduction in customer i's likelihood of purchasing from supplier firm j due to negative referrals.

Negative referrals affect the supplier firm's expected sales from both potential and existing customers; they reduce potential customer i's likelihood of purchase from the supplier firm j (Richins, 1983). We consider potential customer i's likelihood of purchase without receiving a referral for supplier firm j as the base level, and express the effect of negative referrals on the likelihood of potential customer i's purchase from supplier firm j as:

$$\Delta_{-REF}[L(Purchase\ by\ potential\ customer_{ij})] = f_1(Negative\ referrals\ received_{ij})$$
$$(11)$$

where $\Delta_{-REF}[L(Purchase\ by\ potential\ customer_{ij})]$ is the reduction in potential customer i's likelihood of purchase from supplier firm j due to negative referrals and Negative referrals received$_{ij}$ indicates the negative referrals received by potential customer i for supplier firm j.

A negative referral exchange also affects the existing customer's (the referrer's) likelihood of purchase: when customers give negative referrals, they attribute their dissatisfaction to the supplier firm. Laczniak, DeCarlo, and Ramaswami (2001) find that when customers attribute dissatisfaction to the supplier firm, their subsequent evaluation of the supplier firm decreases. Thus, existing customers who give negative referrals are less likely to repurchase from the supplier firm than those who do not give negative
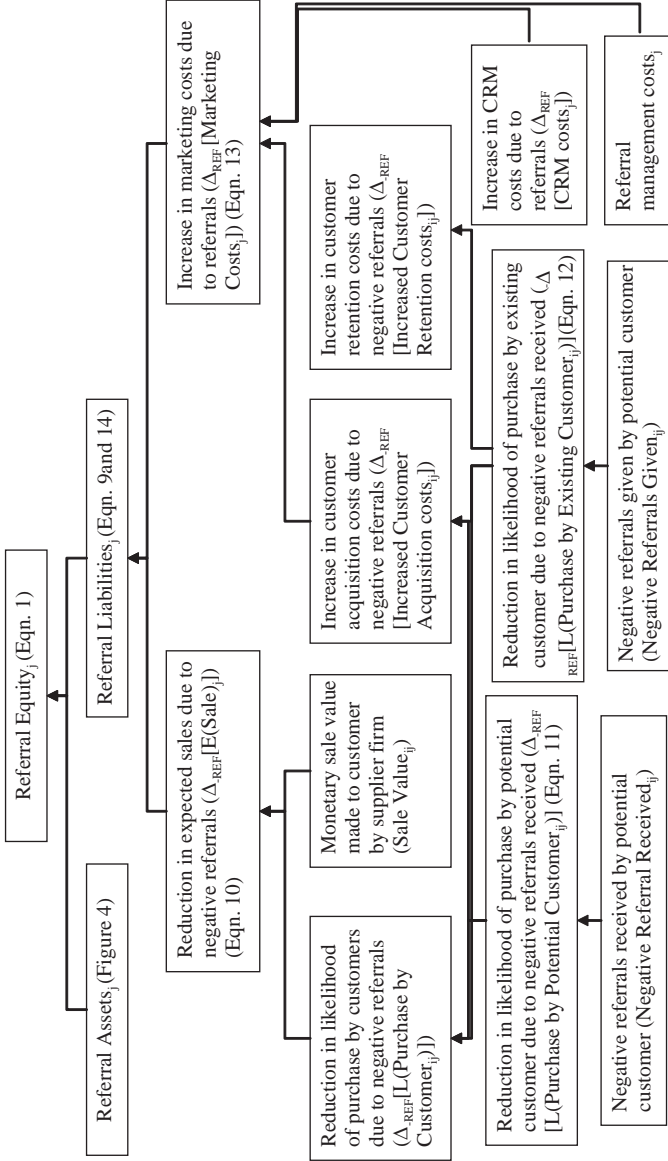
Fig. 5. Referral Liabilities of the Supplier Firm: Graphical Representation.

referrals. As the base level, we use the likelihood of purchase if the existing customer had not acted as a referrer for the supplier firm j, and express the effect of giving a negative referral on the existing customer i's likelihood of purchase as:

$$\Delta_{-REF}[L(\text{Purchase by existing customer}_{ij})] = f_4(\text{Negative referral behavior}_{ij})$$

(12)

where $\Delta_{-REF}[L(\text{Purchase by existing customer}_{ij})]$ is the reduction in existing customer i's likelihood of purchase from supplier firm j due to negative referrals and Negative referral behavior$_{ij}$ indicates customer i giving negative referrals for supplier firm j.

5.3.2. Effect of Positive and Negative Referrals on Supplier Firms' Marketing Costs

Both positive and negative referrals can increase the supplier firm's marketing costs. If potential customers receive a negative referral for the supplier firm, their likelihood of purchase declines (Fiske & Taylor, 1991). To increase the likelihood of purchase, the supplier firm must expend additional money on other information sources (e.g., sales representatives) that can communicate positive information about it to the potential customer. The supplier firm must also address the effect of negative referrals on existing customers' likelihood of purchase and make efforts to retain these customers. Therefore, negative referrals increase the supplier firm's customer acquisition and retention costs.

Other costs associated with negative or positive referrals also increase the supplier firm's marketing costs. First, supplier firms must increase expenditure on their customer relationship management (CRM) processes to increase positive referrals. Zeithaml (2000) emphasizes that service firms should improve their service quality to existing customers to ensure positive referrals to potential customers. Supplier firms also bear costs to reduce negative referrals; as Bowman and Narayandas (2001) show, the supplier firm's effective complaint resolution efforts reduce the likelihood that customers will give negative referrals. Therefore, supplier firms increase their expenditure on CRM processes to manage positive or negative referrals.

Second, the supplier firm's marketing expenditure also increases due to referral programs that encourage existing customers or noncustomers to give positive referrals for them. For example, AT&T's "Rewards for Referrals" program gives existing customers rewards up to $75 (cost for

AT&T) if the customer's positive referral converts a potential customer into an AT&T customer (AT&T, 2009). Customer Reference Forum (2008) shows that 28% of the supplier firms in its survey spend more than $500,000 annually to manage their supplier-initiated referrals. We express the increased marketing costs due to referrals, which contribute to the supplier firm's referral liabilities (Eq. (3)), as:

$$\Delta_{REF}[\text{Marketing costs}_j] = \sum_i (\Delta_{-REF}[\text{Increase in customer acquisition costs}_{ij}]$$
$$+ \Delta_{-REF}[\text{Increase in customer retention costs}_{ij}])$$
$$+ \Delta_{REF}[\text{Increase in CRM costs}_j]$$
$$+ (\text{Referral program costs}_j) \tag{13}$$

where $\Delta_{-REF}[\text{Increase in customer acquisition costs}_{ij}]$ is the increase in costs for acquiring potential customer i due to negative referrals received for supplier firm j, $\Delta_{-REF}[\text{Increase in customer retention costs}_{ij}]$ the increase in costs for retaining existing customer i due to negative referrals given for supplier firm j, $\Delta_{REF}[\text{Increase in CRM costs}_j]$ the supplier firm j's increase in expenditure on CRM due to positive or negative referrals or both, and Referral program costs$_j$ the supplier firm j's expenditures on referral programs.

Substituting Eqs. (10) and (13) into Eq. (9), we have:

Referral liabilities$_j$

$$= PV_t \left(\sum_i (\Delta_{+REF}[L(\text{Purchase by customer}_{ij})] \times \text{Sale value}_{ij}), \right.$$
$$\sum_i (\Delta_{-REF}[\text{Increase in customer acquisition costs}]$$
$$\left. + \Delta_{-REF}[\text{Increase in customer retention costs}_{ij}]) \right)$$
$$+ PV_t(\Delta_{REF}[\text{Increase in customer relationship}$$
$$\text{management costs}_j], \text{Referral program costs}_j) \tag{14}$$

Through the concept of referral equity, we show how referrals affect the supplier firm's cash flow; next we discuss how supplier firms can build referral equity.

6. BUILDING REFERRAL EQUITY BY MANAGING REFERRALS

An account manager from one of my larger vendors – I met with this AM quarterly –
told me that one of the new metrics for their quota was going to be references, and asked
if I'd be willing to help them out.

(Morrison, 2009, former CIO at Motorola)

Morrison's (2009) experience with one of Motorola's supplier firms
highlights how salespeople must build supplier-initiated referrals as part of
their performance appraisal. Supplier firms recognize the benefits of build-
ing referral equity, though most programs (1) focus on increasing referral
assets (i.e., positive referrals), not reducing referral liabilities, and (2) view
customers as referrers, not noncustomers as referrers.

In our framework for building referral equity, we acknowledge positive
referrals as intangible assets and negative referrals as intangible liabilities,
such that referrals can either increase or decrease the returns on the supplier
firm's marketing activities. Therefore, building referral equity implies
increasing the supplier firm's marketing effectiveness. We recommend
that the objectives of a supplier firm to build its referral equity should
involve both increasing the number and influence of positive referrals and
reducing the number and influence of negative referrals (Fig. 6). We propose
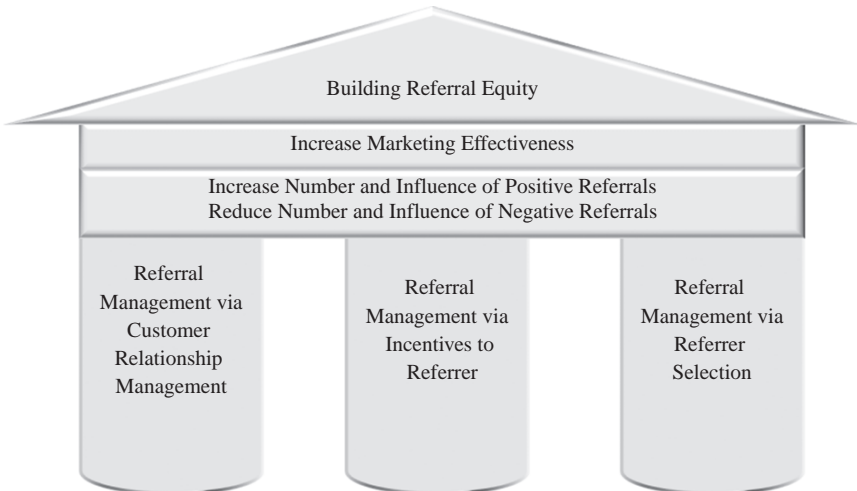
Fig. 6. How to Build Referral Equity: Pillars of Referral Management.

three pillars of referral management as the means to achieve these objectives (Fig. 6):

1. referral management through CRM processes;
2. referral management through incentives to the referrer;
3. referral management through referrer selection.

6.1. Referral Management through CRM Processes

CRM processes aim to achieve and maintain an ongoing relationship with customers (Payne & Frow, 2005) to improve customer satisfaction and thus build the supplier firm's referral equity. Multiple CRM processes, including product management and channel integration, can affect customers' satisfaction and relationship with their supplier firm. We focus on CRM processes that (a) manage the customer's experience and deepen the supplier firm's relationship with the customer and (b) managers consider successful in terms of impact on customer retention and satisfaction. Two CRM processes that satisfy these criteria are customer service and after-sales support, and loyalty and retention programs (Bohling et al., 2006) (Fig. 7).

6.1.1. Customer Service and After-Sales Support
Customers can contact a supplier firm for multiple reasons, such as inquiries about a product's use and availability details, or to change a service contract. For supplier firms, these contacts offer an opportunity to build customer loyalty and influence customers' referral behavior (Bowman & Narayandas, 2001). Goodman, Fichman, Lerch, and Snyder (1995) find that supplier firms' responsiveness to customer inquiries influences not only the customers' overall satisfaction, but also their evaluations of the supplier firms' product and thus their referral behavior.

Dissatisfied customers are more likely to give negative referrals than are satisfied customers, and these negative referrals have a greater influence on potential customers' purchase decisions than do positive referrals (Chevalier & Mayzlin, 2006). Dissatisfied customers often contact the supplier firm to resolve their problems or lodge a complaint. Folkes (1984) finds that customers are likely to give negative referrals after a service failure when they believe the failure is attributable to the supplier firm, is likely to happen again, and could have been avoided. Bowman and Narayandas (2001) also find that if the support offered by the supplier firm does not solve the customer's problems, loyal customers likely give negative referrals.
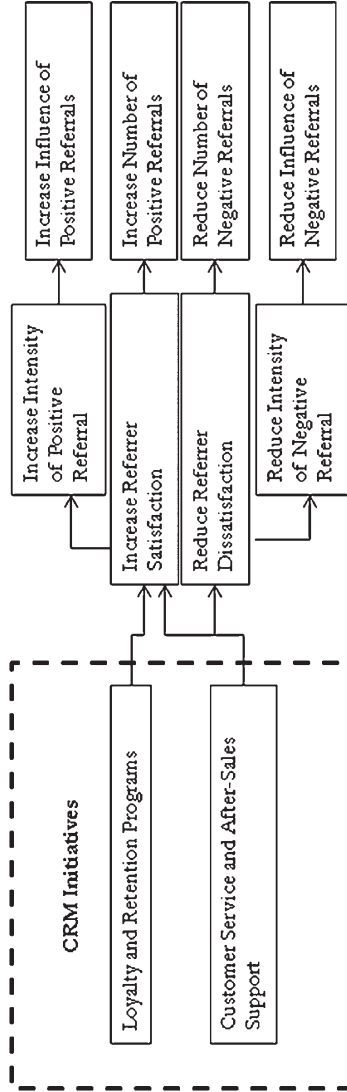
Fig. 7. Referral Management Through Customer Relationship Management: Left Pillar (Fig. 6).
Note: These Strategies are Applicable to Customer-to-Potential Customer Referrals and Supplier-Initiated Referrals.

In contrast, Swanson and Kelley (2001) indicate that if the supplier firm initiates the service failure recovery process and customers believe the failure will not happen again, customers are likely to give positive referrals for the supplier firm.

Customer service and after-sales support processes also alter the influence of positive and negative referrals on potential customers' purchase likelihood. According to Chevalier and Mayzlin (2006), as online reviewers' average star ratings for books on Amazon.com increase (indicating an increase in referral intensity), sales of these books also increase. As customers' (dis)satisfaction with the supplier firm's customer service and after-sales support increases, their referral intensity likely increases, increasing the influence of referrals on potential customers (Fig. 7). Therefore, customer service and after-sales support management can build the supplier firm's referral equity by (1) increasing the number of positive referrals and the influence of positive referrals on potential customers and (2) reducing the number of negative referrals and the influence of negative referrals on potential customers.

6.1.2. Loyalty and Retention Programs

> Owners of Harley–Davidson motorcycles who are members of the H.O.G. (Harley Owners Group) clubs around the world are very visible advocates for the brand. … Harley–Davidson does almost no advertising, depending, instead, upon its community of advocates to purchase both motorcycles and logo gear – and spread the word to others.
> (Lowenstein, 2006)

As Lowenstein (2006) notes, Harley–Davidson's loyalty program, H.O.G., encourages customers to give positive referrals for Harley–Davidson. Bolton, Kannan, and Bramlett (2000) find that loyalty and retention programs strengthen customers' satisfaction and affect their word-of-mouth behavior. Therefore, we expect that these CRM processes will build referral equity by increasing the number of positive referrals for the supplier firm, and increasing the influence of positive referrals on potential customers.

In B-to-B markets, CRM processes, such as key account management programs, focus on building relationships with customers (Homburg, Workman, & Jensen, 2002). Because the supplier firms have strong relationships with their key customers, they can request these customers to act as referrers, and they should know whether the customer will give a positive referral. Therefore, key account management programs can build referral equity by increasing the number of positive supplier-initiated referrals.

6.2. Referral Management through Incentives

SurePayroll launched a referral rewards program in August 2009 that
rewards the referrer with a $50 gift card or $50 donation to select charities, if
the potential customer becomes a client of SurePayroll (SurePayroll, 2009).
Such rewards create incentives for customers to give referrals for the
supplier firm. However, providing referral rewards is only one way to build
referral equity; we note the potential of nonmonetary (Section 6.2.1) and
monetary (Section 6.2.3) incentives, for both customers and noncustomers
(Fig. 8).

6.2.1. Nonmonetary Incentives

The customer's decision to refer a supplier firm or not depends on the
perceived costs and benefits of the referral exchange. We consider two
strategies to increase the benefits to the referrer through nonmonetary
incentives. First, supplier firms can offer incentives to customers to act as
referrers by enhancing their social status and granting them access to infor-
mation, as well as the opportunity to build their own network. For example,
referral programs can bring a community of supplier firms' customers and
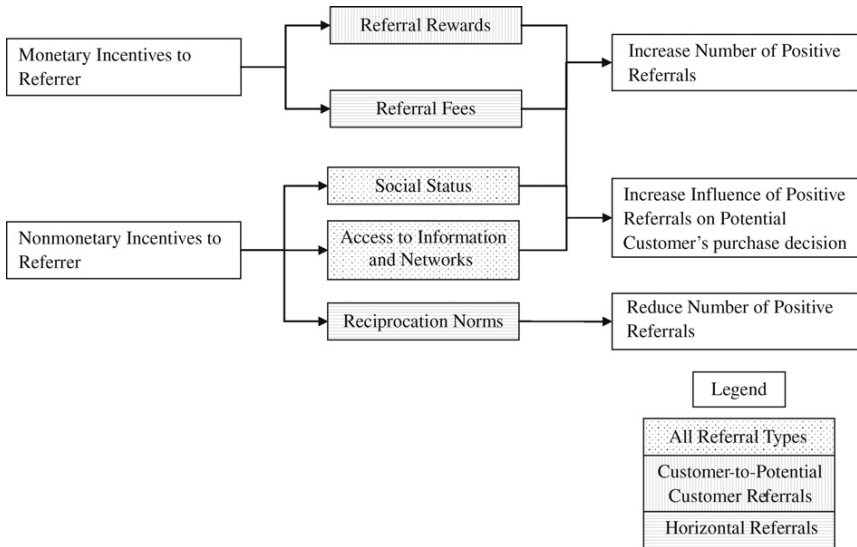
Fig. 8. Referral Management Through Incentives to Referrer: Middle Pillar (Fig. 6).

noncustomers together in a "network of referrers." Second, to manage negative horizontal referrals, supplier firms can rely on reciprocation norms.

6.2.2. Enhanced Social Status, and Access to Information and Networks

> The e-THRIVE/VISTA comparison technique is one of the many aspects of breast MRI that Dr. Newstead is sharing with other physicians. As a member of the Philips Breast MR Ambassadors Network, she conducts educational programs such as Web seminars and hands-on courses.
>
> (Newstead, 2009, p. 12)

Philips Medical Devices builds referral equity by creating networks of opinion leaders and elevating the social status of the referrers within the medical community. Members of Philips' Ambassadors Network consider themselves "key opinion leaders" (Newstead, 2009, p. 11). This positioning enhances their self-image and perceived social status, and thus, increases their likelihood of giving positive referrals for the supplier firm (Gatignon & Robertson, 1985). In Philips' network, the chosen medical specialists also educate other potential customers about Philips' latest techniques and products. This information reduces potential customers' purchase uncertainty (Chen & Xie, 2005), and thus increases the potential customers' likelihood of purchase from the supplier firm.

Networks of referrers also provide customers and noncustomers with incentives to give positive referrals because referrers gain access to information and the opportunity to build their own networks with their peers. Referrers value having potential customers' view of them as pioneers (Feick & Price, 1987), and by giving referrers information about the latest innovations, supplier firms help them maintain their pioneering position. In B-to-B markets, Woodside (1994) shows that potential customers considering the purchase of a new technology are influenced by referrals from third-party firms, such as consultants. We therefore recommend that supplier firms create networks of referrers of third-party companies as well, to increase the number of positive horizontal referrals for the supplier firm.

Reciprocation Norms. From a competitive perspective, it is in the supplier firm's interest to give negative horizontal referrals for another supplier firm, but we posit that the likelihood of such negative horizontal referrals depends on the norms of the industry. Astley and Fombrun (1983) find that common strategies, agreed upon by group members, overwhelm the strategy of an individual supplier firm, and supplier firms comply with

the norms of their industry. Therefore, in an industry group with norms against negative horizontal referrals, supplier firms should not have to manage such negative referrals. However, in industries without strong norms against negative horizontal referrals, supplier firms can use reciprocation threats. If competing supplier firms demonstrate that they can reciprocate against each other's negative referrals, they should recognize that such a strategy would lead to reduced referral equity for both supplier firms. In this situation, they likely will avoid giving negative referrals.

Economists have formalized this concept as the prisoner's dilemma (Tucker, 1950), in which the dominant strategy for both supplier firms, X and Y, is to cooperate and not give negative referrals. However, in the equilibrium condition, when self-interest overrules this dominant strategy, both supplier firms give negative referrals, and the referral equity of both supplier firms declines (see cell I in Fig. 9). Because both supplier firms theoretically play the game repeatedly, the threat of reciprocation and reduced referral equity should lead both supplier firms to cooperate (see cell IV in Fig. 9) (Mailath & Samuelson, 2006). For both supplier firms to cooperate, each must believe that the other can reciprocate. Therefore, to reduce negative horizontal referrals, the supplier firm should display its capability to reciprocate against negative horizontal referrals with negative horizontal referrals for the other supplier firm.

| | | Firm X | |
		Negative Referral for Y	No Referral for Y
Firm Y	Negative Referral for X	I Reduced referral equity, reduced referral equity	II No change in referral equity, reduced referral equity
	No Referral for X	III Reduced referral equity, no change in referral equity	IV No change in referral equity, no change in referral equity

Fig. 9. Demonstration of Reciprocation Norms as Referral Management Strategy with a Prisoner's Dilemma Game. *Note:* Cell II indicates that if supplier firm X does not give a horizontal referral for supplier firm Y, there will be no change in Y's referral equity, and if supplier firm Y gives a negative horizontal referral for supplier firm X, X's referral equity will reduce.

6.2.3. Monetary Incentives

Offering a monetary incentive to the referrer changes the referral exchange among the referrer, the potential customer, and the supplier firm (from the exchanges shown in Table 1). As with all referrals, the referrer provides information about the supplier firm to the potential customer. However, if this referral causes the potential customer to purchase from the supplier firm, the supplier firm rewards the referrer, such that the referrer receives a benefit from the supplier firm (the reward), and from the potential customer (indirectly) (Ryu & Feick, 2007).

Supplier firms are unlikely to offer monetary incentives to referrers in supplier-initiated referrals because the effectiveness of the referral depends on the referrer's reputation. Receiving monetary incentives might damage the referrer's reputation, and thus, decrease the effectiveness of the referral. Therefore, supplier firms should invest in monetary incentives only for customer-to-potential customer referrals (referral rewards) and horizontal referrals (referral fees) (Fig. 8).

Referral Rewards. A referral reward is a monetary incentive that the supplier firm issues to a referrer who gives a positive referral to a potential customer, after the potential customer purchases from the supplier firm. Referral rewards might include discounts on the product or service (e.g., Caesar's Pocono Resorts offers a $50 discount for future stays) or cash and gifts (e.g., AT&T offers existing customers up to $75). Referral reward programs increase the supplier firms' referral equity by increasing the number of positive referrals; however, they also reduce referral equity by increasing marketing costs. The goal is thus to build referral equity through referral rewards with minimum increases in marketing costs.

Ryu and Feick (2007) show that referral rewards increase the likelihood that customers give positive referrals to potential customers, which should increase the number of positive referrals for the supplier firm. However, they also note that referral rewards are irrelevant when strong ties exist between referrers and potential customers (e.g., family members). Because referrers tend to offer recommendations to potential customers with whom they have strong ties first, Ryu and Feick (2007) suggest increasing the referral reward as the number of referrals from a referrer increases.

Another means to increase the effectiveness of referral reward programs comes from Biyalogorsky, Gerstner, and Libai (2001), who suggest supplier firms should not give referral rewards to (1) customers with a low "delight threshold," as they are easily satisfied and therefore may give positive referrals even without rewards, or (2) customers with a high delight

threshold, who are not easily satisfied, because referral rewards will not influence them sufficiently to give positive referrals. To lower the cost of referral programs, supplier firms should offer referral rewards only to those customers who fall between the two extremes of delight thresholds. Further, Ryu and Feick (2007) show that an increase in reward size does not increase the referrer's likelihood to issue a positive referral to a potential customer. Supplier firms should determine and use the optimal reward size that provides incentives for customers to give positive referrals at minimum cost.

Referral Fees.   The software supplier firm SAP targets small and medium-sized businesses through horizontal referrals. Its "SAP Referral Program" offers other firms (value-added resellers and system integrators) a referral fee of 5% of the revenue generated from a positive referral for SAP. The referrers also gain an opportunity to sell services to the potential customer in concert with SAP's offering. Since the launch of the program in the United States in August 2006, the program has produced 350 opportunities for SAP (Linsenbach, 2008).

A referral fee (i.e., a monetary payment to the referrer by the supplier firm for providing a positive referral that results in a customer acquisition) is an incentive for a firm to refer a potential customer to the supplier firm. As the SAP example indicates, this referral is often mutually beneficial for the referrer and the supplier firm. Referral fees based on fee splitting or a percentage of the revenue generated also benefit potential customers, because the referral fee provides incentives for the referrers to refer the best suited, specific supplier firm for that potential customer (Garicano & Santos, 2004). Arbatskaya and Konishi (2006) show that even for flat commission referral fees, supplier firms offer positive referrals to potential customer if they cannot provide the solution themselves. Therefore, referral fees in horizontal referrals result in qualified potential customers with a high likelihood of purchasing from the supplier firm; they also reduce the supplier firms' customer acquisition costs and thus build the supplier firm's referral equity.

6.3. Referral Management through Referrer Selection

Identify the referrers who bring in the most referrals. Then capitalize on that knowledge.
(Kumar et al., 2007)

Kumar et al. (2007) find that a supplier firm's most loyal customers are not necessarily the customers who are likely to give positive referrals for the
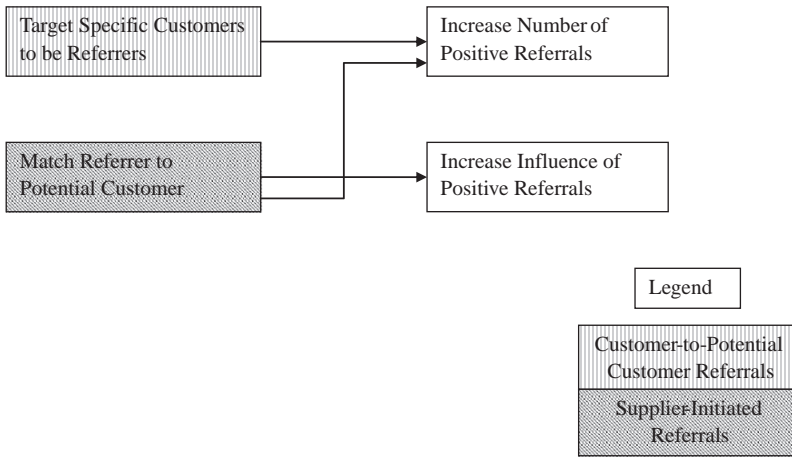
Fig. 10. Referral Management Through Referrer Selection: Right Pillar (Fig. 6).

supplier firm. To build referral equity, the supplier firm should target select customers who give positive referrals, and influence potential customers to purchase from the supplier firm (Fig. 10).

Researchers suggest two types of customers who fit these criteria: opinion leaders and early adopters[4] (Engel & Blackwell, 1982). Opinion leaders, first identified by Lazarsfeld, Berelson, and Gaudet (1948), act as information brokers who intervene between mass media sources and popular opinion; they tend to act as referrers because of their high involvement with the product (Bloch & Richins, 1983). Early adopters are customers who have purchased the product in the early stages of its life cycle, and then actively diffuse information about their new products through product-related conversations (Engel et al., 1969). Because potential customers perceive purchase uncertainty in the early stages of the product's life cycle, early adopters' referrals should have significant influence on their purchase decisions. By targeting these specific customers, supplier firms can increase the number of positive referrals, as well as the influence of those positive referrals on potential customers' purchase decision (Fig. 10).

In supplier-initiated referrals, the supplier firm has an opportunity to match the referrer and the potential customer, such that the referral influences the potential customer's purchasing decision (Fig. 10). Gilly and colleagues (1998a) find that referrals influence potential customers' purchasing decision when potential customers perceive referrers as similar to themselves. Kumar et al. (2009) confirm this effect in B-to-B markets;

they also find that referrers' size and industry influences potential customers' purchasing decision. Therefore, matching referrers to potential customers in supplier-initiated referrals should build the supplier firm's referral equity by increasing the influence of referrals.

Thus, supplier firms can build referral equity through referral management programs. Before supplier firms implement referral management programs, we recommend that supplier firms conduct a *referral audit*. In a referral audit, the supplier firm examines its referral assets and referral liabilities to determine problem areas and opportunities, and recommends a plan of action for building referral equity.

The supplier firm should also quantify and track the effectiveness of the referral management programs through *referral metrics*. One metric supplier firms could use to assess the effectiveness of their referral reward programs is customer referral value (CRV) (see Kumar et al., 2007). For supplier-initiated referrals, Kumar et al. (2009) suggest using the business reference value (BRV) of a referrer, that is, the amount of profit that an existing client (i.e., the referrer) generates through positive referrals to potential clients who purchase products and services as a result of the positive referral. A referrer's CRV and BRV can also help the supplier firm in referrer selection (right pillar of referral management in Fig. 6). Further, measuring the change in the supplier firm's customer satisfaction and loyalty metrics between the pre- and post-implementation audits should indicate the change in referral equity.

As an important research priority, we call for methods to measure referral equity. The first step could be to assess the incremental change in customer acquisitions and retentions due to negative and positive referrals. Conjoint studies can isolate the effect of referrals, and the relative effect of the three types of referrals, on customers' purchase likelihood. The next step is more challenging, to track and study the aggregate effect of all referrals on the supplier firm. Reingen and Kernan's (1986) method for sampling referral chains in the supplier firm's network and Goldenberg, Libai, and Muller's (2001) approach with stochastic cellular automata methods to study word-of-mouth effects offer some pertinent starting points for the development of methods to measure referral equity.

7. CONCLUSION

We regard a referral as a triadic exchange relationship among the referrer, potential customer, and supplier firm; we also highlight that a referral is a

recommendation *for* a supplier firm. Referrals affect the supplier firm's expected sales by influencing a potential customer to purchase or not from the supplier firm. To understand how supplier firms can manage referrals, we discuss their role as an information channel for potential customers who face purchase decisions (see the appendix). We posit that three different types of referrals – customer-to-potential customer referrals, horizontal referrals, and supplier-initiated referrals – provide different channels through which potential customers access information and supplier firms get referrals. By proposing the concept of referral equity, we link referrals to the firm's financial performance and thus contribute to research on the marketing–finance interface (Srivastava et al., 1998). We argue that supplier firms should manage referrals and provide referral management strategies that can build a supplier firm's referral equity. Although many of the ideas we express here may seem familiar, our contribution is to integrate them into a comprehensive framework for referrals.

Our purpose has been to focus on referrals from the supplier firm's perspective. After all, the ultimate goal of marketing is to generate sales for the supplier firm. And as Bennett (2004, p. 607) says: "In sales, a referral is the key to the door of resistance."

NOTES

1. A referral differs from an information flow between A and B that does not relate to B purchasing from C. For example, if A and B discuss the iPhone, and A provides information about its functionalities and applications to B, this information flow represents information transfer through word of mouth or buzz marketing, but it is not a referral.

2. Other information sources might also recommend products or supplier firms to potential customers. Online recommendation agents such as travel recommendation agents recommend specific products to users. Online reviews by customers on Web sites such as Yelp.com also provide information in the form of recommendations. By definition though, we require a referral to involve a one-to-one exchange between the referrer and the potential customer, so for our purposes here, we do not consider impersonal or one-to-many information sources as referrals.

3. Potential customers need not go through all these stages; they can skip a stage or move from problem recognition directly to final choice. Referrals act as an information source for potential customers in such scenarios too.

4. Feick and Price (1987) also identify "market mavens," that is, consumers who communicate frequently about the marketplace and purchasing in general, though not specifically about purchasing from a particularly firm. Because this communication does not relate to a specific firm, we do not consider market mavens pertinent to referrals.

5. The contagion effect in the product diffusion literature consists of interpersonal information transfer (the potential customer becomes aware of the product), interpersonal indirect influence (the potential customer sees another customer using the product and is influenced), and customer-to-potential customer referrals.

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APPENDIX. THE ROLE OF REFERRALS IN POTENTIAL CUSTOMERS' PURCHASE DECISIONS: ILLUSTRATIVE PROPOSITIONS

Potential customers perceive purchase uncertainty before buying a product or service, and to reduce their purchase uncertainty, they conduct an external information search through referrals. In this appendix, we develop illustrative propositions that summarize how the role of referrals depends on (1) purchase decision stage (Section A.1; Fig. 2) and (2) purchase situation characteristics (Section A.2; Fig. 3). Those propositions should be viewed both as summaries of extant knowledge and as potential, testable hypotheses for research.

Referrals affect potential customers' purchase decisions on three dimensions. First, potential customers can search for information through referrals about multiple supplier firms (extensive search), or they can search for in-depth information about one supplier firm (intensive search) (Rees, 1966). Second, potential customers likely use different referral types – customer-to-potential customer referrals, horizontal referrals, and supplier-initiated referrals – in their search. Third, referrals can either influence or not influence potential customers' purchase decision.

A.1. Decision Stages

In the purchase process, potential customers proceed through the stages of problem recognition, creation of awareness set, creation of consideration set, and choice (Fig. 2).

Problem recognition. Potential customers become aware of the problem and develop a desire to solve the problem through a purchase. Referrals do not play a role as this stage is prior to the potential customer's search for information.

Creation of awareness set. To create the awareness set, which consists of all alternatives of which a potential customer is aware (Shocker et al., 1991), potential customers access information from various information channels, such as advertising, consumer reports, catalogs, and word-of-mouth information. This information is stored in the potential customer's memory (individual or organizational) and accessed to create the awareness set. Referrals do not play a role here because potential customers are not conducting an external information search (Fig. 2).

Consideration set. Potential customers create the consideration by adding supplier firms to or discarding them from their awareness set (Hauser & Wernerfelt, 1990; Shocker et al., 1991). To create the consideration set, potential customers likely search for additional products from supplier firms through an extensive information search (Rees, 1966). Further, potential customers are likely to access information from referrers whom they know are current or previous customers of the supplier firm(s), that is, through customer-to-potential customer referrals (Martilla, 1971). Through horizontal referrals, potential customers also access referrers who know more about the industry than existing and potential customers, and referrers can recommend supplier firms that are likely to solve the potential customers' problem. As in the consideration stage, referrals help potential customers add to or limit their consideration set; we expect that the influence of referrals is similar to that of potential customers' other external information sources. In summary:

P1A: At the consideration stage, potential customers are more likely to conduct an extensive information search, than an intensive information search through referrals.

P1B: At the consideration stage, potential customers are likely to search for external information through customer-to-potential customer referrals and horizontal referrals.

P1C: At the consideration stage, influence of referrals should be similar to influence of other information channels on potential customers' decision to consider a supplier firm.

Choice. Potential customers conduct an intensive external information search in the choice stage to evaluate each alternative in their consideration set (Rees, 1966). They seek information through customer-to-potential referrals to engage in in-depth conversations about the supplier firm(s). In B-to-B markets, potential customers often cannot access the supplier firm's existing customers, so they may rely on supplier-initiated referrals. Further, potential customers perceive referrers as more credible than commercial information sources (Murray, 1991), so referrals should have a significant influence on their purchase decision. Therefore:

P2A: At the choice stage, potential customers are more likely to conduct an intensive information search, than an extensive information search, through referrals.

P2B: At the choice stage, potential customers are likely to search for information through customer-to-potential customer referrals and supplier-initiated referrals.

P2C: At the choice stage, referrals are likely to have a significant influence on potential customers' purchase decision.

A.2. Purchase Situation

In this section, we describe how purchase situation factors affect the role of referrals in potential customers' purchase decision. We consider the following factors: product characteristics (Section A.2.1), potential customer's purchase characteristics (Section A.2.2), supplier firm's characteristics (Section A.2.3), referral attributes (Section A.2.4), and the referrer's characteristics (Section A.2.5) (Fig. 3).

A.2.1. Product Characteristics

We consider two product characteristics that are likely to affect potential customers' purchase uncertainty – product life cycle stage and product type (as defined by its search, experience, and credence attributes).

Product life cycle stage. A product's life cycle consists of four stages: introduction, growth, maturity, and decline. In a product's introduction or growth stage (i.e., early stages), potential customers know little about the product's attributes or how to evaluate them, so they perceive high purchase uncertainty. During the maturity or decline stage (i.e., late stages), potential customers are familiar with the products and how to evaluate them, and they perceive low purchase uncertainty (Tellis & Fornell, 1988).

As customer-to-potential customer referrals reduce purchase uncertainty in the earlier stages of the product life cycle (Arndt, 1967), potential customers are likely to search for information through these referrals. Supplier-initiated referrals perform the same function for potential customers in B-to-B markets (Ruokolainen & Igel, 2004). For products in the earlier stages, product diffusion theory finds that customer-to-potential customer referrals (the contagion effect, in diffusion theory[5]) have a significant influence on potential customers' decision to buy a product (e.g., Bass, 1969; Krishnan, Bass, & Kumar, 2000). Therefore, we expect that the influence of referrals on potential customers is higher during earlier, versus later, stages of the product life cycle. In summary:

P3A: Potential customers are likely to search for information through customer-to-potential customer referrals and supplier-initiated referrals

more for products in the early stages, than for products in late stages, of the product life cycle.

P3B: Influence of referrals on potential customers' purchase decision should be higher at the early stages than at the late stages of the product life cycle.

Product type: search, experience, and credence. Products can be classified according to their search, experience, and credence attributes. Potential customers can perceive the quality of search products prior to purchase (e.g., books, furniture), they can ascertain the quality of experience products after purchase (e.g., cruises, restaurants), and they cannot ascertain the quality of credence goods even after purchase (e.g., automobile services, financial investments) (Darby & Karni, 1973; Nelson, 1970). Because potential customers cannot ascertain the quality of experience and credence products easily, they likely conduct an intensive information search for these products. Mangold, Miller, and Brockway (1999) find that in professional services, which are characterized by experience and credence attributes, referrals have a greater influence on the potential customers' purchase decision than do other information sources. In summary:

P4A: Potential customers are more likely to conduct an intensive search for information through referrals for experience and credence products than for search products.

P4B: The influence of referrals on potential customers' purchase decisions is greater for credence and experience products than for search products.

A.2.2. Purchase Situation

In this section, we discuss how potential customers' (1) prior knowledge or perceptions of novelty, (2) purchase complexity, and (3) purchase involvement affect their external information search through referrals.

Prior knowledge/novelty. Objective prior knowledge refers to what potential customers know about the intended purchase; subjective prior knowledge indicates their perceptions of the amount of knowledge they have about the intended purchase (Brucks, 1985). These two constructs are distinct but closely related (Schmidt & Spreng, 1996), and we consider the holistic construct of potential customers' prior knowledge.

Potential customers' experience with the product significantly influences their prior knowledge (Brucks, 1985). In B-to-B markets, Robinson, Faris, and Wind (1967) identify three types of purchase situations, based on potential customers' experience with the product or the novelty of the buying task: new buy, modified rebuy, and straight rebuy. In a new task buy

situation, potential customers are involved in the purchase of a new product; in a modified rebuy, they are either looking for a new supplier firm for an existing product or upgrading/downgrading an existing product; and in a straight rebuy, they are repurchasing the same product with the same supplier firm. Thus, potential customers have lower prior knowledge in a new task buy than in a modified rebuy, and lower prior knowledge in a modified rebuy than in a straight rebuy.

Highly knowledgeable potential customers likely narrow their consideration set on the basis of detailed information about specific product attributes, and they possess the ability to ask in-depth questions about the product (Schmidt & Spreng, 1996). Therefore, the higher the potential customers' prior knowledge, the more likely they are to conduct an intensive, rather than extensive, information search through referrals. Because in horizontal referrals, referrers should know more about the industry's other supplier firms than do customers, we expect that highly knowledgeable potential customers are more likely to search for information through horizontal referrals.

The lower the potential customers' prior knowledge, the lower is their self-confidence in their knowledge and ability to take the right decision (Brucks, 1985). Because referrers help evaluate the purchase for the potential customer (Chen & Xie, 2005), the lower the potential customers' prior knowledge, the greater is the influence of referrals on their purchase decision. In summary:

P5A: The higher the potential customers' prior knowledge, the more likely they are to conduct an intensive, than an extensive, external information search through horizontal referrals.
P5B: The lower the potential customers' prior knowledge, the greater the influence of referrals on potential customers' purchase decision.

Purchase complexity. Potential customers perceive purchase complexity when the process associated with the product's use is complex or the product requires them to evaluate many attributes (Brucks, 1985; McQuiston, 1989). By evaluating the purchase for the potential customer (Chen & Xie, 2005), referrers minimize potential customers' perceived purchase complexity, increasing their influence on potential customers' purchase decision. Further, Brucks (1985) finds that the relationship between the extent of potential customers' prior knowledge and the amount of their external information search grows stronger with potential customers' perceived purchase complexity. Thus, we expect that the effect of low prior knowledge

on potential customer's external information search through referrals increases with increased purchase complexity. In summary:

P6A: The higher the purchase complexity, the higher the influence of referrals on potential customers' purchase decision.
P6B: The higher the purchase complexity, the stronger the positive effect of prior knowledge on potential customers' external information search through referrals.

Purchase involvement/importance. Potential consumers' involvement with the purchase decision reflects their perception of the purchase as personally relevant (Wangenheim & Bayón, 2007). The construct of product involvement in consumer markets is similar to the construct of purchase importance in B-to-B markets. Purchase importance is the "buyer's perception of the significance of the buying decision and/or the potential impact of the purchase on the functioning of the firm" (Bunn, 1993, p. 43).

Dowling and Staelin (1994) find that the higher the potential customers' purchase involvement, the higher their perceived risk from the purchase is. Further, Moriarty and Spekman (1984) find that personal, noncommercial information sources (such as referrers) help reduce potential customers' perceived purchase risk. Therefore, the influence of referrals on potential customers' purchase decision should increase as purchase involvement increases. Further, potential customers' lower prior knowledge also increases their perceived purchase risk (Dowling & Staelin, 1994). Thus, the lower the potential customers' prior knowledge, the greater is the effect of purchase involvement on the influence of referrals on potential customers' purchase decision. In summary:

P7A: The higher the potential customers' purchase involvement, the greater the influence of referrals on potential customers' purchase decision.
P7B: The lower the potential customers' prior knowledge, the greater the effect of purchase involvement on influence of referrals on potential customers' purchase decision.

A.2.3. Supplier Firm Characteristics

Purchase situations in which potential customers do not have previous experience with the supplier firm determine the supplier firm's capabilities to deliver the product on the basis of its reputation. The lower the reputation of the supplier firm, the higher is the potential customers' perceived uncertainty. Therefore, potential customers attempt to reduce purchase uncertainty by gathering in-depth information about the supplier firm

through intensive search (Puto, Patton, & King, 1985). In contrast, potential customers can rely on the signal of a supplier firm's good reputation to lower their perceived purchase uncertainty. Therefore:

P8A: The lower the reputation of the supplier firm, the greater the likelihood of potential customers conducting an intensive external information search through referrals.
P8B: The lower the reputation of the supplier firm, the greater the influence of referrals on potential customers' purchase decision.

A.2.4. Referral Attributes
Referral attributes, valence and intensity, affect the role of referrals in potential customers' purchase decision. As potential customers pay more attention to negative information than positive information (Fiske & Taylor, 1991), we expect that negative referrals will have a higher influence on the potential customer's purchase decision than positive referrals. Further, the referral's intensity (how strongly the referrer gives the recommendation) can send a signal to the potential customer about the referrer's strength of feelings about the supplier firm's product (Banerjee & Fudenberg, 2004). A strong signal should have a higher influence on potential customers' purchase decision than a weak signal. Therefore:

P9A: Negative referrals are likely to have a higher influence on potential customers' purchase decision than positive referrals.
P9B: The higher the referral intensity, the greater the influence of the referral on the potential customers' purchase decision.

A.2.5. Referrer Characteristics
Referrer characteristics, such as credibility and product expertise, affect the referral's influence on the potential customer's purchase decision (Fig. 3). Referrer credibility pertains to the potential customer's perception of the trustworthiness and expertise of that referrer (Sternthal, Dholakia, & Leavitt, 1978). Murray (1991) finds that credible referrals have a significant influence on purchase decisions. Referrers with high product expertise are also likely to increase the referral's influence on potential customer's purchase decision (Gilly et al., 1998a).

A CRITICAL REVIEW OF QUESTION–BEHAVIOR EFFECT RESEARCH

Utpal M. Dholakia

ABSTRACT

This chapter reviews research on the question–behavior effect*, the phenomenon that asking questions influences respondents' behavior. Two distinct research streams, the* self-prophecy effect*, concerned with socially normative behaviors, and the* mere measurement effect*, dealing with purchase behaviors without socially normative significance, are identified. Despite the recent attempt at integration, it is argued that there are fundamental differences between the two effects. Distinctions are also drawn between lab-based and field-based mere measurement effects, and between normatively consistent and implicit attitude-driven, normatively inconsistent self-prophecy effects. Key studies, theoretical explanations, and moderators of each effect are discussed, potential unanswered questions and research opportunities are identified, and significant managerial and policy implications are highlighted.*

Asking questions is the most common way of assessing an individual's internal states and predicting future behavior in social science research. In academic and applied settings, people are often asked to evaluate a particular

object, issue, or organization, and to report their past and future behaviors. For instance, political parties, special interest groups, and media organizations poll potential voters regarding their positions on various issues and ask whether they will vote and for whom they will vote in an upcoming election. Marketing researchers ask consumers about their satisfaction with a particular product or a firm, their intentions to purchase products, and the degree to which they will recommend the product to others. Public health officials survey individuals about the frequency with which they perform various health-enhancing (e.g., wearing sunscreen, exercising, etc.) and risky (e.g., smoking, having unsafe sex, using drugs, etc.) behaviors. Economists are interested in eliciting the employment characteristics of citizens and their future outlooks toward consuming and saving.

In all of these cases, researchers implicitly assume that responding to questions will not have any subsequent influence on the individual. However, in testing its veracity over the last three decades or so, research has shown time and again that this assumption is tenuous at best, and invalid in many cases. Studies have found that answering questions, for example, through surveys, influences respondents in a variety of ways and through different psychological processes. The research area of the "Question–Behavior Effect" examines the short- and long-term psychological and behavioral effects of answering questions.

Virtually all Question–Behavior Effect (QBE) research can be traced to Sherman's (1980) study on the "self-erasing nature of errors of prediction." In a series of experiments, Sherman studied the ability of individuals to predict their future socially desirable actions. He found two consistent results. First, when asked about a future socially normative behavior, study participants significantly overpredicted the degree to which they would perform it when compared with a control group that was simply given the opportunity to enact the behavior without being questioned. For instance, in one study, 47.8% of those asked to volunteer their time for a charitable cause predicted they would do so, but in reality only 4.2% of the control group volunteered. Second, respondents subsequently behaved in ways consistent with their overpredictions, that is, they acted in socially normative ways to a greater extent than the control group. In the charitable cause study, 31.1% of the respondents who were asked actually volunteered their time for the cause. Thus, respondents' errors of behavioral prediction were self-erasing. Sherman's (1980) conclusion from the studies was: "When you look before you leap or predict behavior before you behave, the leaping and the behavior are likely to be altered; and indications are that the behavior will become more socially desirable and morally acceptable" (p. 220).

Since Sherman's paper, there have been dozens of studies examining the QBE. Researchers have replicated the effect in different settings, demonstrating its occurrence for socially desirable behaviors such as recycling, voting in elections, and donating to one's alma mater; socially undesirable behaviors such as gender stereotyping, using drugs, and skipping class; and neutral or "normatively ambiguous" (Spangenberg, Greenwald, & Sprott, 2008) behaviors, such as consumer purchases and relationships with firms. Studies have examined the magnitude and scope of the QBE, for example, its effect size (in the case of the self-prophecy effect [SPE]), its occurrence for different types of questions, and its temporal pattern, that is, how it evolves and how long it lasts. Researchers have also explored the underlying processes, discovering a number of boundary conditions, and considered its managerial, policy, and consumer welfare implications (see Sprott et al., 2006a; Sprott, Spangenberg, Knuff, & Devezer, 2006b; and Fitzsimons & Moore, 2008, for recent reviews).

OBJECTIVES OF THIS CRITICAL REVIEW

One noteworthy criticism of extant QBE research is that it is spread among different disciplines with oftentimes little information exchange between the areas. Researchers have used a number of different terms, studied different types of questions, and investigated a variety of behaviors. There are also variations in response modality, methodology, and theoretical explanations across the QBE studies. Table 1 summarizes these distinctions, showing the diversity of QBE research.

Research on the mere measurement effect (MME) and the SPE – the two dominant streams of QBE research – proceeded virtually independently for more than a decade before researchers in these areas acknowledged each other (Sprott et al., 2006a, 2006b). Recently, prominent researchers from the two camps have called to merge these research streams, proposing that

> We now find ourselves at a point where two once-independent groups of scholars have agreed to travel together towards an understanding of this phenomenon, as opposed to following separate, parallel paths … The beginning of this journey is to adopt formally a new descriptor for previously reported self-prophecy and mere-measurement effects. In particular, we encourage the use of the label *question–behavior effect* … By acknowledging similarities in the literature and adopting a shared, single label for related, observed effects, we can step back and take a comprehensive look at the broader set of phenomena we have observed and the proposed explanations for these phenomena. (Sprott et al., 2006a, p. 129)

Table 1. Summary of Distinctions Found Across Question–Behavior
Effect Studies.

Q–B research focus	Effects of measuring purchase intentions (in lab and field), measuring satisfaction with firm-sponsored surveys, making self-predictions regarding socially desirable and undesirable behaviors, forewarning customers that they will evaluate surveys through individualized questioning, screening and monitoring surveys on risky behaviors of children and adolescents, mass-communicated self-prediction requests through advertisements, asking hypothetical questions
Type of question (independent measure) assessed	Behavioral intention (e.g., intention to purchase or intention to recycle), behavioral expectation, self-prediction using a dichotomous (yes/no) question, attitude (e.g., overall or transaction-specific customer satisfaction)
Type of behavior (dependent measure) assessed	One-time behavior (e.g., purchase of an item), behavioral pattern (e.g., frequency of unprotected sex or drug use), behavior repetition (Chandon, Morwitz, Smith, Spangenberg, & Sprott, 2007), choice (e.g., purchase of one brand vs. another brand), self-reported behavior (Williams et al., 2004), written commitment to perform behavior in the future (Sprott et al., 2003), behavioral expectation (Janiszewski & Chandon, 2007)
Response modality	Paper and pencil, telephone, face-to-face interview, mass-communicated "ask yourself" advertisement, individual mailers
Methodology	Laboratory experiment, controlled field experiment, panel-based field data
Theoretical explanations	Questioning: (1) increases accessibility of attitudes, (2) results in behavioral simulation and increases response fluency, (3) creates a perceptual image of action (ideomotor theory), (4) polarizes attitudes, (5) generates positive inferences, (6) generates a broad range of inferences, (7) produces cognitive dissonance, (8) heightens self-awareness, (9) evokes socially acceptable scripts of behavior, (10) increases the effect of implicit positive attitudes (even when explicit attitudes regarding behaviors are negative)
Study distinctions	(1) Whether the behavior studied is socially desirable or not, (2) how soon the behavior is assessed after questioning, (3) whether the behavior is assessed in the laboratory in a controlled setting or whether it is assessed in the field, (4) how effortful, that is, easy or difficult to implement, the behavior is

This call for integration is admirable, and there is no question that both mere measurement and self-prophecy researchers are studying related issues. However, it is still not clear how far to take the integration of these research streams. Should the terms "mere measurement effect" and "self-prophecy effect" be abandoned entirely? In my view, the answer depends on the degree of overlap between these effects with respect to when, how, and perhaps most importantly, *why* they occur.

The current state of QBE research is that it is disjoint; there is sore need not only for understanding degrees of similarities and differences between the MME and the SPE but also for a consolidation of what is already known. Relatedly, a consideration of its implications is needed along with an elaboration of the gaps in our understanding and the promising next steps to advance our state of knowledge regarding QBEs. The current chapter seeks to accomplish these objectives.

Its purpose is to provide a critical review of the QBE research area. In the next two sections, I first give attention to research on the MME and next to research concerning the SPE. Despite the recent integration attempt, I argue that there are fundamental differences between the two effects. To prevent conceptual confusion and stimulate knowledge development, researchers are advised to specify which effect they are studying and position their contributions and findings to the relevant effect when designing research studies and interpreting their findings. For example, mere measurement studies concern purchase behaviors that are normatively neutral in the sense that acting or not acting does not have socially desirable or undesirable elements from the consumer's standpoint. In contrast, self-prophecy studies exclusively examine socially normative behaviors. Consequently, the primary explanation provided for one phenomenon, say, the SPE, is of limited utility in explaining why the MME occurs, and vice versa.

I also draw and elaborate on the distinctions between lab-based and field-based MMEs, and between traditional self-prophecy research and the nascent, evolving, and potentially important research on effects of surveys on risky behaviors of adolescents (Fitzsimons & Moore, 2008). Within each research stream, I review and discuss key published studies, examine different theoretical explanations, and describe known moderators. Table 2 summarizes the key distinctions between the four types of QBE research discussed here.

Throughout the chapter, I highlight potential unanswered questions and research opportunities to advance our knowledge of the QBE, which are summarized in Table 3. Finally, I discuss the significant managerial and policy implications of QBE research. I argue that the findings and its

Table 2. Comparative Summary of Question–Behavior Effect Research Streams.

	Lab-Based Mere Measurement Effect Research	Field-Based Mere Measurement Effect Research	Normatively Consistent Self-Prophecy Effect Research	Normatively Inconsistent, Implicit Attitude-Driven Self-Prophecy Effect
Time frame of effect	Generally short; behavior is measured within minutes or hours of questioning	Generally long; behavior is measured weeks, months, even years after questioning	Studies have examined both short- and long-term effects	Empirical findings are based mostly on short-term effects; conclusions have been applied to longer term
Methodology	Only lab studies	Only field experiments	Lab studies and field experiments	Lab studies and field experiments
Theoretical explanation	Increased attitude accessibility, increased response fluency behavior simulation, ideomotor process, attitude polarization. Automatic processing plays a larger role	Generation of positive inferences, generation of a broad range of inferences. Largely driven by deliberate information processing	Cognitive dissonance, activation of normative social identity, increased self-awareness, script evocation. Driven mostly by deliberate processing	Behavior influenced by positive implicit attitudes instead of negative explicit attitudes. Automatic processing counteracts controlled processing
Questions asked (independent measures)	Purchase intentions	Purchase intentions, customer satisfaction	Self-prediction by responding to "yes/no" question; likelihood of performing a behavior	Behavioral intentions regarding risky behavior
Effects studied (dependent measures)	Self-reported behavior, actual behavior, choice	Purchase of new product, customer defection, customer profitability, number of services purchased, inter-purchase time	Actual behavior	Self-reported behavior, actual behavior

Behaviors/products/industries studied in research	Candy bars, ice-cream treats, usually cheap, frequently purchased food items	Automobiles, PCs, financial services, online grocery, automotive maintenance services (quick-lube oil change)	Recycling, voting, donating to charity, attending a health club, health and fitness screening, alumni donations, gender stereotyping, choosing a low-fat snack, attending cervical screening, donating blood	Drug use, skipping classes, drinking alcohol, watching television instead of studying, class attendance
Moderators of the effect	Experience with product, behavior characteristics that increase ease of representation	Experience with product, experience with firm, customer characteristics (demographics), firm characteristics	Normative beliefs of participants, self-monitoring levels, specificity of self-prediction request, respondent characteristics	Debiasing by providing advance warning
Notable studies	Fitzsimons and Morwitz (1996), Fitzsimons and Williams (2000), Chapman (2001), Fitzsimons and Shiv (2001), Morwitz and Fitzsimons (2004), Levav and Fitzsimons (2006), Janiszewski and Chandon (2007)	Morwitz, Johnson, and Schmittlein (1993), Ofir and Simonson (2001), Dholakia and Morwitz (2002), Chandon et al. (2004, 2005), Dholakia et al. (2004), Borle, Dholakia, Singh, and Westbrook (2007), Ofir et al. (2009), Dholakia et al. (2010)	Sherman (1980), Greenwald et al. (1987), Spangenberg (1997), Obermiller and Spangenberg (2000), Spangenberg and Greenwald (1999), Spangenberg et al. (2003), Sprott et al. (2003, 2004), Spangenberg and Sprott (2006), Stutzer et al. (2007), Perkins et al. (2008), Godin et al. (2008), Goldstein et al. (2008), Liu and Aaker (2008), Sandberg and Conner (2009)	Williams, Block, and Fitzsimons (2006), Fitzsimons et al. (2007)

Table 3.   Unanswered QBE Research Questions.

Research opportunities regarding mere measurement effect
- In a meta-analysis of MME studies, what is the average effect size and what is the range of effect sizes across studies? Are there differences in effect sizes between lab-based and field-based MME studies? What are the other drivers of differences in effect sizes?
- Do mass-communicated requests produce the MME? When and to what degree?
- What aspects of lab-based MME findings can be extrapolated to field-based MME studies? What aspects are unique and not transferable between studies?
- How does behavior of customers who anticipate and later complete satisfaction surveys, customers who only complete satisfaction surveys, and a control group, differ from one another? Comparing these behaviors within a single study will help determine relative magnitudes of different effects on behavior.
- In studying how increased attitude accessibility contributes to the MME, does product category experience increase the relative role of automatic processing vs. effortful processing? If yes, to what degree?
- What role does increased attitude accessibility play in longer-term occurrence of the field-based MME? Morwitz and Fitzsimon's (2004) lab-based experimental paradigm could be extended to execute in the field over a longer time period.
- Does questioning facilitate formation of implementation intentions? Are certain types of questions (e.g., purchase intentions) more conducive to forming implementation intentions?
- Can processing fluency produce an MME for complex behavior involving self-regulation or for purchases of expensive products?
- Can processing fluency effects persist for weeks or months after initial exposure?
- What role does the ideomotor process play in the MME's occurrence?
- What role does attitude polarization play in the MME's occurrence? Are there certain circumstances or conditions under which it plays a stronger role?
- Under what circumstances (e.g., telephone-based vs. online, use of a professional interviewer, opportunity to provide open-ended feedback, follow-up by the firm to explain how customer feedback was used) do customers produce positive inferences from survey participation?
- What is the specific cognitive process through which the positivity inference process occurs?
- What other types of inferences can customers form because of survey participation? Under what circumstances do these inferences work in tandem, counteract, or are unrelated to one another?
- How do prior experiences with the firm affect the types of inferences made by customers regarding the survey?
- Which individual differences between respondents (e.g., demographics, traits) moderate the MME's occurrence? What are the psychological reasons for these differences?

Research opportunities regarding self-prophecy effect
- How does question content influence occurrence of the SPE? Does questioning that targets the critical behavior directly or indirectly change the underlying process?
- Does self-prediction increase availability of prior failed attempts contributing to self-concept confrontation?
- Can personal norms (instead of social norms) contribute to cognitive dissonance for personally normative behaviors such as resolutions and generate the SPE?
- How do personal beliefs and normative beliefs interact in occurrence of the SPE? Under what conditions do they mutually reinforce and contradict each other?

Table 3. (*Continued*)

- Does the SPE occur for behaviors that have a physiological component (e.g., nicotine dependence) which inhibits the effect of social norms?
- Do perceived obligations, permissions from respected individuals or groups, or peer pressure dampen the force of cognitive dissonance?
- Under what conditions does self-prediction activate a normative social identity instead of cognitive dissonance?
- Which individual factors affect sensitivity to the SPE, and through what means?
- Under what circumstances do explicit and implicit attitudes for socially normative behavior contradict each other? What moderating variables determine relative strength of the two attitudes?
- What can we learn from the self-regulation literature on how to enhance positive impact of the SPE and mitigate potentially negative impacts of positive implicit attitudes for risky behaviors?

Common research opportunities across mere measurement and self-prophecy research
- What proportion of the QBE (across studies) is due to respondent self-selection? What aspects of respondent self-selection are particularly contributory to the effect's occurrence? How can the researcher control for the selection bias?
- In what ways can the QBE be minimized or reversed? Does forewarning help minimize the effect, and under what circumstances?
- What are the effects of repeated questioning on different customer groups?
- In what ways should anti-sugging laws be modified to reflect reality? How best should practices for conducting survey research promoted by the DMA, the CASRO, and other industry groups acknowledge occurrence of the QBE?
- How can managers correct for errors in prediction arising from the QBE in their forecasting models?

potential consequences merit widespread attention and thought among researchers and practitioners who use a questioning methodology to elicit information from individuals for any purpose.

THE MERE MEASUREMENT EFFECT

Introduction to the Mere Measurement Effect Research Stream

This line of research, conducted primarily by marketing and consumer researchers, has focused on effects of questioning on consumers' purchase behavior. The original study was that of Morwitz et al. (1993) who coined the term ''mere measurement effect'' based on the observation that *merely measuring* purchase intent of consumers impacts their purchasing behavior.

Using panel survey data sets, they studied purchases of automobiles and personal computers among panelists who had completed a purchase intentions survey and those who did not participate during the six months afterward. They found significant and practically meaningful increases in both cases. For PCs, asking intent increased the purchase rate by 18% (3.80% for nonrespondents vs. 4.48% for respondents), and for automobiles, the increase was 37% (2.4% vs. 3.3%).

Review of Mere Measurement Effect Research Studies

Building on this initial study, Fitzsimons and Morwitz (1996) shifted the frame of analysis from product category to brand. They argued that asking a purchase intentions question about a product category (without referring to individual brands) activates the category in proportion to the prior accessibility of brand cognitions. Thus, a brand that is more accessible previously is more likely to be activated in memory and influence behavior. Results of their study showed that among current car owners, increase in choice incidence accrued to their current car brand. For example, Saab owners became more likely to purchase another Saab. In contrast, those who did not own a car were more likely to purchase a popular brand with a large market share.

Since then, a number of studies have demonstrated this effect. Morwitz and Fitzsimons (2004) showed its occurrence in participants' choice of Canadian candy bars through laboratory experiments. In one of their studies, for example, the choice share of a target candy bar increased from 29.7% when purchase intentions were not measured to 54.1% when purchase intentions were measured. In another paper, students who were asked (vs. not asked) their likelihood of flossing teeth reported greater instances of teeth flossing in a subsequent two-week period (Levav & Fitzsimons, 2006; see also Williams, Fitzsimons, & Block, 2004). Janiszewski and Chandon (2007) demonstrated the MME's occurrence through lab-based studies that involved choosing ice-cream treats and candy bars.

Dholakia and Morwitz (2002) studied the effects of measuring customer satisfaction. In a field experiment conducted by a large US financial services firm, one customer group of 945 participated in a telephone-based satisfaction survey regarding the firm and its products, whereas a comparable group of 1,064 was the control. Both groups were withheld from the firm's direct marketing activities for a year after the survey, and their behaviors and profitability were tracked during this time. Results

showed that survey participants owned significantly more accounts (5.45 vs. 3.39), had a defection rate that was less than half (6.6% vs. 16.4%), and were significantly more profitable ($107.8 per month vs. $97.2 per month) than the control group. These differences were persistent. Survey participants continued to open new accounts at a faster rate and to defect at a much slower rate than nonparticipants, even a year afterward. As I argue in detail later, this and other field-based, long-term mere measurement studies are different in several crucial aspects from lab-based studies.

In cooperation with the leading French web-based grocer, Chandon et al. (2004) studied the incidence, timing, and profitability of online grocery purchases made by consumers whose purchase intentions were measured and those of a control group. They found that measuring intentions led to an increased likelihood of repeat purchase and a shortened length of time before the first repeat purchase. For instance, one month after the survey, 9% of the control group and 20% of the surveyed group had made at least one repeat purchase from the site. However, both effects decayed rapidly after three months. Nevertheless, they found persistent gains in customer profitability because the accelerated purchases of the first three months led to faster subsequent purchases in the remainder of the nine-month period of their study.

Dholakia, Morwitz, and Westbrook (2004) explicitly compared those who expressed *medium* and *low* levels of satisfaction in the firm's survey, in addition to those who expressed *high* levels of satisfaction. Their results revealed that in comparison with a control group, all three surveyed groups exhibited *more* purchase and relational behaviors. In their study of customers of a large US automotive services provider, Dholakia, Singh, and Westbrook (2010) found that survey participants *delayed* their very next visit to the firm's stores, even when expressing high satisfaction, but accelerated later service visits. Through a lab experiment, they explained these results through increased service comprehensiveness perceptions among survey participants.

Research has also shown that asking hypothetical questions (e.g., "If strong evidence emerges from scientific studies that cakes, pastries, etc. are not nearly as bad for your health as they have been portrayed to be, and may have some major health benefits, what would happen to your consumption of these items?") can have a significant biasing effect on behavior (Fitzsimons & Shiv, 2001). The percentage of respondents who chose cake over fruit increased significantly if respondents had been asked a hypothetical question about the benefits of baked goods an hour earlier. The authors proposed that such questions enhance the accessibility of cognitions related to the false proposition(s) provided in the hypothetical question,

leading the decision maker to behave in ways that are consistent with these activated cognitions. Consistent with this process, an increase in cognitive elaboration increased the contaminative effects of hypothetical questions, especially when the hypothetical questions were perceived as relevant to the decision (Fitzsimons & Shiv, 2001). However, when confronted with the possibility that the hypothetical question may have guided behavior, they denied this association, suggesting the operation of an automatic process.

Studies have also examined the effects of informing consumers prior to a service encounter that they will be asked to evaluate it afterward. Across a number of studies, results showed that forewarning customers leads them to provide less favorable quality and satisfaction evaluations and reduces their willingness to purchase and recommend the evaluated service (Ofir & Simonson, 2001; Ofir, Simonson, & Yoon, 2009). Demonstrating its robustness, this effect occurred in cases where actual service quality was either low or high, and even after participants were explicitly instructed to consider positive and negative aspects of the service (Ofir & Simonson, 2001). Its impact on the consumer's evaluation of the service was enduring, lasting several days after the service encounter (Ofir et al., 2009). The authors concluded that "expecting to evaluate the store's service appears to change the actual shopping experience and promote a more thorough evaluation process" (Ofir et al., 2009, p. 14).

Anticipating answering questions before actually answering them and simply answering questions without forewarning have dramatically different effects on behavior that should be examined further in future research. For example, it would be interesting to contrast the behavior of customers who anticipate and later complete satisfaction surveys, customers who only complete satisfaction surveys (without prior anticipation), and a control group, within a single study, to determine the relative magnitudes of the different effects on behavior. Next, differences between lab-based and field-based mere measurement research are considered.

Lab-Based vs. Field-Based Mere Measurement Research

The reviewed studies indicate that researchers have used starkly different approaches and measures to study the MME. Two distinct methodological approaches can be discerned in these studies, which I refer to as "lab-based" and "field-based" MMEs in this chapter. I argue that this difference has significant bearing on how the MME unfolds with respect to its scope and persistence, and the process(es) driving the effect.

Lab-based mere measurement research is typically conducted via controlled experiments in the laboratory within relatively short time frames. The gap between question and behavior is of the order of minutes or hours. These studies often utilize novel stimuli such as Canadian candy bars (Morwitz & Fitzsimons, 2004) and European ice-cream treats (Janiszewski & Chandon, 2007) to be able to manipulate the subject's attitudes and to prevent contamination from prior knowledge. The stimuli are low-priced, frequently purchased food items. The dependent measure usually studied in this research is *choice* (selection of one option from a set of alternatives) or *purchase likelihood* ("How likely are you to purchase [the product]?") in most cases. Less often, actual purchase behavior of participants is measured (e.g., Janiszewski & Chandon, 2007, Experiment 4), but even in these cases, the amounts involved are a few dollars.

Field-based mere measurement studies are different in all these respects. They are conducted in the noisy real-world environment with existing customers of a firm over longer periods of time. The gap between question and behavior is of the order of weeks, months, and even years (e.g., Borle et al., 2007; Chandon et al., 2004; Dholakia & Morwitz, 2002; Morwitz et al., 1993). Unlike lab study subjects who are unacquainted with the product beforehand, participants not only know the firm and its products well, but they have an ongoing relationship with it. Questioning therefore has the potential to influence a wider range of behavior, including repurchasing, complaining, communicating, word-of-mouth, and identity-expressive behaviors. Because of an ongoing relationship, effects of questioning have the potential to occur over an extended period of time, that is, weeks or months postsurvey.

Field-based studies have covered a number of industries, from automobiles and PCs (Morwitz et al., 1993), to financial services (Dholakia & Morwitz, 2002), online grocery retail (Chandon et al., 2004), and automotive maintenance services (Borle et al., 2007; Dholakia et al., 2004). Thus, the contexts tend to involve products with a wider range of prices and levels of consumer involvement. Additionally, field-based studies measure actual behaviors and performance metrics such as customers' defection rates, profitability, frequency of repeat purchase, and number of items purchased per visit. A broader range of customer behaviors is assessed in these studies relative to lab-based studies. Many of these behaviors are effortful or difficult to implement for consumers, making occurrence of the QBE in a sustained and broad-based manner even more noteworthy (Gollwitzer & Oettingen, 2008).

In the current chapter, I propose that because of these stark differences, the MME phenomenon studied in the laboratory is *essentially different* from

the effects observed in the field. Most existing research has tended to ignore or downplay the distinctions between these effects, implicitly assuming that findings in one setting and the reasons for their occurrence fully extrapolate to the other setting. However, I propose that the theoretical explanations for why the MME occurs in the field, and therefore its boundary conditions, the means of attenuation, and practical implications, are, by and large, different from the lab-based MME.

Theoretical Explanations for the Mere Measurement Effect

In the decade and a half since the Morwitz et al.'s (1993) article, considerable scholarly effort has gone into explaining why the MME occurs. In this section, I discuss theoretical explanations for the lab-based MME first, followed by what is known about why the field-based MME occurs.

Explanations for Occurrence of the Lab-Based Mere Measurement Effect Questioning Increases Accessibility of Attitudes. The most widely cited explanation for the MME is based on increased accessibility of attitudes because of responding to questions. Researchers have generally relied on *self-generated validity theory* (Feldman & Lynch, 1988; Simmons, Bickart, & Lynch, 1993) as the basis for explaining why the effect occurs.

According to this theoretical explanation, when survey respondents are asked a question – for example, their satisfaction evaluation – many are unlikely to have formed such a judgment spontaneously beforehand or even given much thought to the issues pertaining to such a question (Weiner, 1985). Upon being asked, the respondent engages in thoughtful processing, constructs a response, and provides it to the questioner. The cognitive processing and articulation of the judgment increase its subsequent accessibility, resulting in behaviors that are consistent with the expressed judgment (Alba, Hutchinson, & Lynch, 1991; Kardes, Allen, & Pontes, 1993; however see Converse, 1970, for a different perspective). During the time that accessibility of responses remains greater, it affects postsurvey behavior (e.g., Fitzsimons & Williams, 2000; Morwitz & Fitzsimons, 2004).

This explanation is supported by a number of lab studies. As an example, in a series of experiments, Morwitz and Fitzsimons (2004) provided process-based evidence that responding to a purchase intention question increases accessibility of the attitude toward the behavior. Participants were asked to form attitudes about Canadian candy bars (that they were unfamiliar with),

then list reasons for purchasing or not purchasing a particular bar, and finally indicate whether they would purchase *any* bar (general purchase intention). Participants who provided their general purchase intention were more likely to choose a particular bar if they had listed positive reasons for purchasing it, and vice versa. They were also more likely to recall the more accessible brand and could judge it as good with much more speed/using less time. Across the studies, respondents were more likely to choose options toward which they held positive and accessible attitudes, and less likely to choose options with negative accessible attitudes.

There is also evidence that the increased accessibility of attitudes upon questioning occurs largely through an *automatic process* (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Fitzsimons and Williams (2000) tested the extent to which the MME occurs because consumers carefully consider making a purchase among various brands in the category or because the question automatically invokes category members, heightening their pre-existing accessibilities. In lab studies using a process dissociation procedure to separately estimate contributions of automatic and effortful processing,[1] the authors demonstrated that the change in respondents' behavior was more than three times as much due to automatic activation of the cognitive structure in which that information is contained as the effect of effortful processing. Note that such a process requires the existence of a well-learned set of cognitions regarding category members (Fazio et al., 1986) implying that product category experience may strengthen the relative role of automatic processing.

Interestingly, some of the field-based studies have also relied on increased attitude accessibility to explain their results. Dholakia and Morwitz (2002) and Chandon et al. (2004) both argued that accessibility of their respective measures explained the effects that they observed. Dholakia et al. (2004) also found consistent results among long-standing customers in their field study. When expressing dissatisfaction in the survey, such customers were likely to behave less relationally when compared with control customers, indicating their behavior was in line with their now more accessible negative attitudes.

Despite these findings, none of the field-based studies have provided process-based evidence for operation of increased attitude accessibility. In the social psychology literature, increased accessibility of information is viewed as an automatic and short-term phenomenon (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; Gilbert & Hixon, 1991; Wyer & Srull, 1989), generally lasting for a few minutes. The extent to which it also influences long-term consumer behavior after questioning

requires more careful validation (see also Levav & Fitzsimons, 2006; and Sprott et al., 2006a, 2006b, for similar views). One way to do so would be to adopt Morwitz and Fitzsimons' (2004) experimental paradigm, executing it in the field over a longer period of time.

Additionally, some findings from lab-based studies done by Chapman (2001) are inconsistent with increased attitude accessibility. First, he showed that measurement of purchase intentions influenced behavior toward novel products (see also Janiszewski & Chandon, 2007). In these cases, increased attitude accessibility is inapplicable because it is impossible for consumers to have attitudes when they have not encountered the product before. Second, Chapman (2001) found that when consumers repeatedly respond to an intent question regarding a novel product, they exhibit an increase in attitude toward the product, but this is not accompanied by an increase in positive thoughts regarding it, again ruling out an attitude-driven explanation. Finally, he found a stronger MME for purchase intentions than for product attitudes. Assuming that answering questions about attitudes directly increases their accessibility to a greater extent than answering intent questions without attitude elicitation, this pattern of findings is anomalous.

To summarize, increased attitude accessibility is currently the leading explanation for the lab-based MME. Although some field-based studies have invoked it, compelling evidence to support the thesis that attitudes made accessible through questioning remain available for weeks, months, or years afterward is still lacking. Additionally, evidence from some lab-based studies indicates that other forces may be at work in conjunction with, or in place of, increased attitude accessibility when individuals are questioned.

Questioning Results in Behavior Simulation and Increases Response Fluency.   Another explanation that can account for the MME's occurrence proposes that when responding to survey questions, individuals utilize *simulation*, imagining the target behavior and the specific circumstances under which they might engage in it. When the time comes for enactment, the simulated action sequence is easier to retrieve than alternative unimagined actions, and it directs the respondent's behavior. Behavior simulation does not necessarily have to be elaborated on by the respondent; it can also occur automatically through unconscious processing such as by greater ease of fluency (Levav & Fitzsimons, 2006). Sherman (1980) first proposed (but did not test) this explanation by suggesting that when questioned, respondents generate a *script*, or a mental representation of stereotyped event sequences for a particular situation (Abelson, 1981). They then simply invoke the script when the situation actually occurs. Behavior

simulation can explain the MME for novel behaviors, and a stronger MME for intentions than attitudes, which increased attitude accessibility is not able to explain (Chapman, 2001).

As I discuss later in this chapter, behavior simulation is also conducive to explaining SPEs for socially normative behaviors in some cases (Spangenberg & Greenwald, 1999). Finally, a related possibility is that responding to questions under certain circumstances (e.g., for short-fuse behaviors which have a limited window of opportunity for enactment) facilitates the production of an *implementation intention* specifying when, where, how, and how long the actions will be carried out (Gollwitzer, 1999). Prior research provides ample evidence that implementation intentions make it more likely that short-fuse behavior such as using a coupon before expiration will be enacted during the open window of opportunity (e.g., Dholakia & Bagozzi, 2004). QBE research still has not explicitly considered the role of implementation intention formation upon questioning and its influence on behavior (however, see Goldstein, Imai, Göritz, & Gollwitzer, 2008, for comparison of effects of measuring behavioral intentions *or* forming implementation intentions on voter turnout). It could be that certain types of questions such as specific purchase intentions are more conducive to implementation intention formation because the respondent "fills in the blanks" regarding the contingencies under which the behavior will be enacted.

Levav and Fitzsimons (2006) provided empirical support for increased response fluency by testing boundary conditions for the MME's occurrence. In their *ease-of-representation hypothesis*, the authors posited that the effect of questioning on behavior is an increasing function of the ease with which the behavior is mentally represented. They argued that this is because questions about intentions lead to two related mental operations: representation of the target behavior and an assessment of how easily the representation came about. In their experiments, different manipulations that were designed to increase ease of mentally representing or simulating the behavior (described in detail in the section on moderators of the MME) increased the strength of measurement.

Janiszewski and Chandon (2007) tested the role of response fluency more directly, offering an explanation based on *transfer-appropriate processing*. They hypothesized that the redundancy in cognitive processes used to generate responses during the initial questioning and the cognitive processes used to decide whether to engage in the behavior at a later time creates a processing fluency favoring actions consistent with the original response. Through a carefully executed series of eight lab studies, they provided

evidence that processing fluency contributed to the MME beyond either attitude or information accessibility.

Nevertheless, at least three limitations of the studies reported by Levav and Fitzsimons (2006) and Janiszewski and Chandon (2007) are worth pointing out. First, most studies have elicited behavioral expectations as the ultimate dependent variable (e.g., purchase likelihood) instead of actual behavior. Thus, it is not clear whether the pattern of results found in the studies supporting the process would hold for actual behaviors (see Sherman, 2008, for an elaboration of this issue). Second, the studies were limited to simple behaviors (e.g., flossing, Levav & Fitzsimons, 2006) and the purchase of low-priced products (ice-cream treats and candy bars, Janiszewski & Chandon, 2007). Consequently, it remains unknown whether processing fluency can produce an MME for complex behaviors involving self-regulation or for expensive products. Finally, although Janiszewski and Chandon (2007) cited evidence from cognitive psychology suggesting that processing fluency effects can persist for weeks or even months after the initial exposure, direct evidence for the longer-term existence of processing fluency effects is lacking. Note, however, that Levav and Fitzsimon's (2006) studies did span weeks and examined processes indirectly through consideration of boundary conditions. In summary, as it presently stands, behavior simulation/increased response fluency has garnered considerable evidence for lab-based MMEs but little evidence for the field-based MME.

An Ideomotor Process Explanation.   Related to the behavioral simulation account, Spangenberg et al. (2008) recently proposed that the *ideomotor effect*, defined as the perceptual image or idea of action that facilitates initiation of that action when no other contradictory idea is present in the mind (James, 1950), can help explain both mere measurement and SPEs. They suggested that a question activates a perceptual image or idea of the action. The activated image guides future performance of behavior. According to the authors, an ideomotor perspective may account for QBEs for a variety of behaviors since many everyday actions are likely to have clear ideomotor representations. This explanation currently remains empirically untested. Assuming its occurrence, its scope and extent of occurrence are also unknown, offering promising future research possibilities.

Attitude Polarization.   Morwitz and Fitzsimons (2004) also proposed an alternative explanation for the MME limited to conditions when intentions are repeatedly assessed. They suggested that asking an individual his or her behavioral intentions could activate the node for the general behavior and

thus access his or her attitude. To the extent that accessing the node for the general behavior functions in the same manner as repeated expression of a response, they hypothesized that there should be a *polarizing effect* on initial attitudes for highly accessible choice options and a corresponding change in choice favoring these options. Specifically, those who express high initial levels of intent should have higher repurchase rates and those with low initial levels of intent should have lower purchase rates the more often their intent is measured relative to a control group (Morwitz et al., 1993).

Morwitz et al. (1993) found some evidence supporting this explanation, but only for those respondents who reported low initial intent levels in their studies. They did not find this effect for those expressing high initial intent levels. Through lab experiments, Morwitz and Fitzsimons (2004) were able to rule out attitude polarization as an explanation for their findings. However, Dholakia et al. (2010) did find higher overall satisfaction levels among consumers who had been surveyed and had reported their satisfaction with a particular service visit either four or nine months later, indicative of polarization. To date, this is not a favored explanation for the MME. However, it may explain the effects of repeated questioning on some respondents and could have practical implications, such as providing guidelines to firms regarding how frequently they should survey their customers. For a satisfied customer base, for example, structured questioning every one or two years may be beneficial. More studies are needed to investigate this explanation in depth.

Explanations for Occurrence of Field-Based Mere Measurement Effect

Although a number of field-based studies have invoked increased attitude accessibility, at least two other explanations are as, if not more, relevant for field-based MMEs.

Questioning Generates Positive Inferences. One explanation consistent with self-generated validity theory (Feldman & Lynch, 1988) is that participation in a survey conveys favorable information about the firm. Survey participation leads customers to formulate positive inferences, for example, "The firm values my opinions," "It is making a bona fide effort to please me," "It is caring and concerned about its customers in general," etc., which influences the individual's behaviors. This "positivity effect" (Dholakia et al., 2004) is applicable to marketing research surveys where the firm first identifies itself as the survey's sponsor.

This explanation is consistent with consumer psychology theorizing that positive inferences formed on the basis of a single employee's actions can

influence the customer's evaluation of the entire firm (Folkes & Patrick, 2003). It is also congruent with the theory of *selective hypothesis testing* (Sanbonmatsu, Posavac, Kardes, & Mantel, 1998), which posits that individuals often form focal hypotheses regarding firms (e.g., the firm is a good organization to conduct business with) based on initially encountered evidence and using few information sources (or even a single source), which are used to guide interpretation of the gathered evidence and an assessment of the evidence's validity (see also Ofir & Simonson, 2001).

Dholakia et al. (2004) found that participation in a satisfaction survey conducted by an automotive services retail chain led customers to engage in service visits with greater frequency, purchase more services, and become more likely to redeem coupons, *even when they expressed dissatisfaction in the survey* when compared with a control group. Such a pattern of findings cannot be explained by increased attitude accessibility, which predicts reduced visits for the dissatisfied group (compared with the control). In explaining why adolescents perform risky behaviors such as using drugs after being questioned, Gollwitzer and Oettingen (2008) suggested that questioning may not only affect the implicit attitude's state of activation but may also increase its level of positivity, a notion that is consistent with the positivity effect.

However, unlike implicit attitudes, the positivity effect relies on the consumer's conscious and thoughtful cognitive processing regarding the firm's motives for conducting the survey. Through this process, survey participation enduringly changes the respondent's opinion regarding the firm. Relative to increased attitude accessibility, the positive inference account is better able to explain why firm-sponsored survey participation has a broad-based and long-lasting positive impact on customer behaviors that can be observed for weeks or months after the survey. However, it is not able to explain why the effect also occurs for unsponsored surveys such as those involving consumer panels (e.g., Morwitz et al., 1993) or those conducted by third-party organizations. Although plausible, to date, lab-based MME studies have not directly examined whether the positivity effect can occur in the lab setting, and under what circumstances.

Likewise, much remains to be known regarding the boundary conditions for positive inferences generated by customers even in the field. For example, it could be possible that when the firm conducts a survey by telephone (as in Dholakia et al.'s (2004) study), the respondent generates positive inferences because of the higher perceived cost and effort expended by the firm in questioning; in contrast, when the survey is done online, it may be perceived as less costly and effortful, and might not have a

similarly positive effect on customer behavior (e.g., Johnson & Folkes, 2007). Other factors such as the use of a professional interviewer, the opportunity to provide open-ended feedback and suggestions, and a follow-up conversation explaining how the feedback given in the survey was acted on could each facilitate generation of positive inferences, enhancing positive behavioral effects from mere measurement.

Further understanding the specific cognitive process through which the positivity effect occurs is also a promising research opportunity. At least two possibilities seem evident. First, the positivity effect could occur because of an improved customer relationship with the firm. When asked to participate in a satisfaction survey, customers may infer that such a request is a *relationship-enhancing attempt by the firm directed specifically at them*. In response to such an overture, customers may experience positive affect toward the firm, and reciprocate, leading to more favorable behavior than if they had not been asked to participate.

An alternative possibility is an *expectancy explanation*, which holds that customers selected for the survey attribute the firm's request to its customer orientation and its commitment to providing superior service. Since these are nearly universally held beliefs about desirable characteristics of firms, customers may come to view the firm conducting the survey as a superior one seeking above its competitors to please and be responsive to its customers. As a result of their enhanced perceptions and expectations, these customers would display correspondingly stronger relational behaviors toward the firm.

Questioning Generates a Broad Range of Inferences. Rather than just positive inferences, a recent study by Dholakia et al. (2010) proposed that answering firm-sponsored satisfaction surveys can produce inferences among respondents regarding issues beyond those specifically inquired about in the survey. They argued that because a firm's customers have a broad base of knowledge and a high degree of interest in the questioning, they possess both the motivation and the ability to generate a wide range of positive and negative inferences. Taking the perspective of the survey respondent as a thoughtful individual (Bradburn, Rips, & Shevell, 1987), such an explanation is consistent with recent social psychological research showing that individuals can spontaneously infer goals from verbal stimuli such as goal-implying sentences (Hassin, Aarts, & Ferguson, 2005), which can then affect behavior (Aarts, Gollwitzer, & Hassin, 2004).

To test this proposition, the authors examined the role of service comprehensiveness inferences regarding an automotive quick lube service,

which they defined as the customer's belief that more elements of the service were performed in addition to the oil change, resulting in a more thorough checkup of the vehicle. In a lab study, they found that satisfaction survey participants recalled more specific service elements and reported receiving more complete service from the firm than nonparticipants. They also described a longitudinal field study conducted in cooperation with a national automotive services chain, which showed that postsurvey, consistent with inferences of service completeness, participants delayed their very next visit even when they reported being highly satisfied with the last one, but accelerated later service visits when compared with nonparticipants. This was the first MME study to show *contrasting valence* for satisfied customers, that is, satisfied customers showed a negative behavior (i.e., delay in repurchasing the service) after being questioned.

Ofir and Simonson's (2001) research on the effects of expecting to evaluate on satisfaction evaluations of consumers provides additional evidence for the process of inference-making by survey respondents. In understanding why expecting to evaluate led to more negative evaluations, they found support for a "negativity enhancement" explanation, whereby expecting to evaluate prior to questioning reinforced the consumers' tendency to focus on and overweigh the negative aspects encountered during the service. They argued that one reason for negativity enhancement is that consumers inferred that the service provider wanted them to offer negative and constructive criticisms, which is why they tended to focus on weaker or underperforming aspects of the service. Furthermore, they sought out negative aspects because such elements appeared to be much more diagnostic and therefore useful to the service provider. Thus, current findings indicate that forewarning customers that they will be asked to evaluate satisfaction induces negative inferences (e.g., "Firms need improvement and I should provide constructive feedback") and actual participation in a satisfaction survey can lead to positive inferences (e.g., "Firms care about customers"). Providing an overarching theoretical explanation for these findings is an interesting future research avenue.

Relatedly, Lusk, McLaughlin, and Jaeger (2007) demonstrated that survey respondents act in their own self-interest, responding to purchase intentions questions strategically by making inferences about how their responses will influence the product's future price, and the marketer's decision of whether to offer the product. Finally, the proposed process underlying Levav and Fitzsimons' (2006) "ease of representation" hypothesis also supports the possibility of inference-making by respondents. They suggested that when providing responses, respondents infer likelihood of

the behavior's enactment from the ease with which they can represent it, which, in turn, spurs the formation of an implementation intention for the future.

The notion that consumers form a broad range of inferences due to survey participation, which could potentially change how they view the firm in a significant and durable fashion, is a drastically different explanation for the MME than increased attitude accessibility discussed earlier, which focuses on shorter-term activation of responses. The stark contrast between these explanations captures the fundamental conceptual differences between the lab-based and field-based approaches to studying mere measurement. Nevertheless, although the notion of inference-making is intuitively appealing and receives support from social psychological theorizing and the described studies, it does raise the question of tractability. Potentially, survey respondents could simultaneously generate a multitude of inferences, some of which work in tandem, others that counteract, and still others that are unrelated to one another, in influencing behavior. Considerably more theoretical and empirical work is needed before we know the different types of inferences produced by surveys in the field and under what circumstances they occur.

Summary. As the discussion in this section indicates, existing evidence strongly suggests that different processes or more likely combinations of processes may be at work when the MME occurs in the lab than when it occurs in the field. Of the existing studies, a large proportion has focused on increased attitude accessibility, and this explanation appears amenable to playing a significant role in occurrence of lab-based, and potentially some role in the field-based, MME. Relatively few studies have focused on other explanations, and in most cases, there are a handful of studies examining any one particular process. There is a great need for future studies not only to confirm occurrence of these other processes but more importantly to gain a deeper understanding regarding the conditions under which each process (or combination thereof) contributes to the MME's occurrence.

Moderators of the Mere Measurement Effect

In this section, I review what is known about current boundary conditions for the MME. Most studies identifying boundary conditions have done so for field-based MMEs. These studies provide new and useful insights into the subtleties, scope, and processes underlying the MME. Very few studies

have examined boundary conditions for the lab-based MME (Levav & Fitzsimons, 2006, is a notable exception).

The Consumer's Experience with the Product Category

The consumer's product experience is a well-established moderator in MME research. Studies generally show that the MME diminishes with product experience. Morwitz et al. (1993) found this to be the case in their study. In the PC category, for example, measuring intent increased sales of PCs by 20.7% for experienced consumers but by 45.3% for those without prior product experience. Similarly, they found that *polarization*, that is, more extreme behavior with repeated intent measurement, also diminished with prior experience. These findings are consistent with more than one theoretical explanation, including increased attitude accessibility, increased response fluency, and making inferences. It can be argued that experienced consumers are affected less because they possess more accessible attitudes, greater cognitive fluency, and a large store of knowledge about the firm, respectively, prior to questioning, than those who are inexperienced. Although not specifically addressing this issue, Dholakia and Morwitz's (2002) study provides conflicting findings. Their study, conducted exclusively with experienced customers, still found a strong and persistent MME.

Fitzsimons and Morwitz (1996) found that at the brand level, the MME was manifested in different choices for current car owners and for those who did not own a car. Car owners gravitated toward their existing brand, whereas nonowners were more likely to buy prominent high market share brands. These findings are more clearly consistent with an increased attitude accessibility explanation: Current owners knew more about their current brand which became more accessible afterward; in contrast, nonowners knew more about leading car brands.

The practical implication of this moderator is that through judicious sample selection and postsurvey interventions, researchers may be able to diminish the effects of questioning on their respondent base. For example, to minimize impact, the sample for a satisfaction survey could be overweighted with experienced customers.

The Customer's Experience with the Firm

Dholakia et al. (2004) found evidence of moderation by the customer's experience with the firm in their study. Note that this variable is conceptually different from the customer's experience with the product category because it measures the customer's knowledge of, and relationship with, the specific firm conducting the research. They found that the processes by

which the MME occurred varied for novice and experienced customers. Novice customers were more susceptible to the *positivity effect*: they made positive inferences regarding the firm based on the survey, which influenced their behavior. In contrast, experienced customers were influenced by increased accessibility of responses to survey questions that led them to behave in accordance with their expressed responses. Those who expressed satisfaction in the survey purchased more, whereas those who were dissatisfied purchased less than the control group. Thus, prior experience with the firm shifted the psychological process through which the MME occurred.

Although no studies have examined this issue, it is also likely that prior experiences with the firm could affect the types of inferences customers make regarding the survey. For example, customers who have had prior negative experiences may be much more skeptical and infer negative reasons for the survey than customers who have had positive experiences. More research is needed to understand the role played by firm experience on the MME.

Respondent Characteristics

The notion that individuals should be differentially susceptible to the MME based on their demographics and traits is intuitively appealing and of potential practical significance. Surprisingly, few studies thus far have sought to uncover individual differences in respondents' susceptibility to the MME. One exception is Borle et al. (2007), who studied this issue. Their empirically oriented study was done in cooperation with a leading US-based automotive services store chain. In their paper, they developed a joint model of four customer behaviors during each service visit: (1) number of promotions redeemed; (2) number of services purchased; (3) time since the last visit in days; and (4) amount spent. They considered a number of customer characteristics as predictors: gender, age, tenure with the firm, the vehicle's manufacture year, median household income, and household size.

Borle et al. (2007) found a number of interesting moderating effects of customer characteristics on the MME. The effects of survey participation diminished with increasing age, greater customer tenure, and with increasing age of the customer's vehicle. They argued that both age and tenure are indicative of customer experience and these customers are less likely to gain additional useful information from the survey, or to form measurement-induced judgments. In contrast, younger and newer customers are likely to have uncrystallized opinions regarding the firm, and the survey should

impact them to a greater degree. Both household income and size also strengthened the MME for some of the behavioral variables. Interestingly, the customer's gender was the only characteristic studied that did not play a moderating role for any of the behaviors. The Borle et al. (2007) study did not investigate the psychological reasons for the differences which remains an interesting and practically important issue to be studied.

Firm Characteristics
Borle et al. (2007) also examined the moderating role played by store-specific variables in influencing the MME's strength. The store-level variables studied were (a) whether the store was company-owned or franchisee-owned; (b) whether it had a customer lounge; (c) its number of service bays; and (d) a measure of throughput times. The results revealed that survey participation had more beneficial effects on customers purchasing at company-owned stores than at franchisee-owned stores. In explaining this result, Borle et al. (2007) suggested that the difference could have arisen because company-owned stores offered a larger menu of services when compared with franchisee stores. Consequently, after survey participation, customers visiting company-owned stores would have more opportunities to act in accordance with their positive evaluations than those visiting franchisee-owned stores. They also noted the possibility that employees at company stores might be more responsive, leading to more positive behaviors. This was the first, and to my knowledge, the only study to date, documenting the moderating role of firm characteristics on the MME.

The two moderators, customer characteristics and firm characteristics, support the intuitive yet intriguing possibility that survey participants are differentially affected by the MME. There are a variety of trait variables that have the potential to play significant moderating roles. For example, the need for cognition (Cacioppo, Petty, Feinstein, & Jarvis, 1996), the need to evaluate (Jarvis & Petty, 1996), and the conscientiousness factor of the Big-Five traits (Conner & Abraham, 2001) are good starting points to examine trait moderators for both lab-based and field-based MME.

Behavior Characteristics That Increase Ease of Representation
Levav and Fitzsimons (2006) tested the moderating role of three aspects that increase the ease of representing the behavior. In one study, they manipulated *self-relevance of the intention question*, finding that when study participants were asked their own likelihood of flossing teeth (vs. the

likelihood of one of their classmates), they were more susceptible to the MME. In another study, they manipulated *question frame*. Participants were either asked a straightforward, positively framed intent question about consuming fatty foods, the likelihood of not engaging in the behavior, or the likelihood of avoiding it completely. Compared with a control condition, all three groups consumed fewer chocolate-chip cookies (vs. rice cakes); additionally, those in the avoidance condition ate fewer cookies than either the intent or negation conditions. Levav and Fitzsimons (2006) argued this was because congruence between the negative attitude and avoidant behavior made the behavior easy to represent, increasing the MME's strength.

In their last study, the authors manipulated *congruence between regularity of target behavior and the frequency with which it was referenced* in the question. For regular behavior such as flossing teeth, the strength of the MME was greater when the question referenced a regular frequency (e.g., seven times in the coming week) than an irregular frequency (e.g., eight times in the coming week). No such moderating effect of behavioral frequency was found for reading for pleasure, a behavior that is usually performed irregularly. The authors argued that frequency regularity positively affected the individual's ease of representation for regularly occurring target behaviors but not for irregularly occurring behaviors.

Summary of Mere Measurement Effect Research

This review makes it clear that the MME is a robust effect, replicated by a multitude of researchers in diverse settings, and influences consumer behavior significantly. However, unlike self-prophecy research, we do not yet know the magnitude of effect sizes across studies or the drivers of effect sizes. Additionally, two starkly different approaches to studying the effect can be discerned in the literature: studies conducted in the laboratory and field-based studies. There are significant differences between the two approaches in the study environment, types of participants, stimuli, and behaviors studied, all of which contribute to different theoretical explanations, boundary conditions, and practical implications. Researchers are advised to clearly define the approach chosen during study design and test the current implicit but untested assumption that findings from one domain, say, the lab, apply to the other domain, the field.

THE SELF-PROPHECY EFFECT

Introduction to the Self-Prophecy Effect Research Stream

Unlike mere measurement research that focuses on consumers' purchase and relational behaviors, research on the SPE exclusively examines effects of questioning on socially normative behaviors[2] and is defined as follows: "Asking people to make a self-prediction regarding a socially normative behavior influences the performance of that behavior in the future" (Spangenberg & Sprott, 2006, p. 550). Tracing its origins more directly to Sherman's (1980) study than the MME, the SPE has been documented in a wide range of socially normative contexts (see Sprott et al., 2006a, 2006b, for a recent review, and Spangenberg & Greenwald, 1999, for an earlier review).

Studies have found self-prophecy to increase voter turnout in elections (Goldstein et al., 2008; Greenwald, Carnot, Beach, & Young, 1987), increase attendance at health clubs (Spangenberg, 1997), raise the commitment to a voluntary assessment of one's health and fitness (Sprott, Smith, Spangenberg, & Freson, 2004), increase recycling of aluminum cans (Spangenberg, Sprott, Grohmann, & Smith, 2003; Sprott, Spangenberg, & Perkins, 1999), reduce gender stereotyping (Spangenberg & Greenwald, 1999), increase alumni donations to one's alma mater (Obermiller & Spangenberg, 2000), and increase frequency of choosing low-fat snacks over less healthier options (Sprott, Spangenberg, & Fisher, 2003). These studies show that after self-prediction, behavior of respondents is biased in the socially normative direction. Questioning increases performance of socially desirable actions and reduces performance of socially undesirable ones.

However, recent research studying the effects of questioning on risky behaviors specifically by children and adolescents has found normatively inconsistent behavioral effects (see Fitzsimons & Moore, 2008 for a review). Risky behaviors are negatively valenced from a normative standpoint, including such actions as drinking alcohol, having unsafe or unprotected sex, and using drugs. They are risky because their performance entails a threat to the mental and/or physical well-being of the respondent or others, immediately or in the future. For such behaviors, a number of recent studies reviewed by Fitzsimons and Moore (2008) have found that questioning adolescents increases behavior even when they report negative attitudes toward it.

Review of Self-Prophecy Effect Research Studies

In one of the earliest demonstrations of the SPE, which was positioned as a replication of Sherman's (1980) study, Greenwald et al. (1987) studied the

effects of asking students by telephone to predict whether they would either register to vote, or actually vote. When compared with control groups that were not asked about performing these behaviors, there was an approximately 10% increase in the probability of voting registration and an approximately 25% increase in the likelihood of voting among those who made self-predictions.

In another early empirical demonstration in a consumer context, where the term "the self-prophecy effect" was first introduced, Spangenberg (1997) used a brief telephone survey and either asked members of an athletic health club who had not attended for at least one month whether or not they would visit the club in the future or did not ask this self-prediction question. During the subsequent six-month period, the questioned group (who retained their membership for the duration) attended the club significantly more times than the control group.

Instead of individualized administration of prediction requests, Spangenberg et al. (2003) conducted an advertising campaign. They posted the question "Ask Yourself. Will You Recycle?" on a large (2 ft × 7 ft) electronic board, on actual-sized wooden stop signs at key entrances, and on flyers hung on bulletin boards in each classroom within a large building on a university campus. They measured recycling prior to this advertising campaign, as well as during and afterward, by counting the proportion of aluminum cans purchased from vending machines in the building that were placed in recycling bins. They found that the campaign led to an increase in recycling behavior from 16% to 28%, that is, by 75%. This is one of the few QBE studies demonstrating the effect even when questions are neither posed nor answered individually by respondents. In this case, the question was asked through a mass communication medium and presumably answered by individuals internally when they encountered it. This finding significantly increases the scope of SPE effects, extending how they can be used by practitioners interested in influencing socially normative behaviors of consumers.

A number of other studies have demonstrated occurrence of the SPE in the lab and the field. Spangenberg and Greenwald (1999) examined effects of self-prediction on gender stereotype activation in a name generation task (deciding whether famous individuals are male or female given their last names). Their results revealed that experimental group participants who were asked to predict whether they would be more likely to guess male names, female names, or both equally when they did not know the correct name, subsequently were more likely to guess female names erroneously than a control group. Self-prediction thus reduced the expression of gender stereotypes in this study.

Although positioned as an MME study,[3] Godin, Sheeran, Conner, and Germain (2008) found that asking recent blood donors whether they would

donate blood again in the next six months led to significantly greater registrations at blood drives as well as more successful donations six months as well as a year after questioning. The authors did not study underlying processes for these results. Sandberg and Conner (2009) extended these findings to the case of cervical screening among UK women, finding that asking about behavioral intentions plus anticipated regret from not performing the behavior increased attendance rates significantly (65%) when compared with asking the intentions question alone (44%). Both groups had higher attendance rates compared with a control group. The authors argued that higher levels of anticipated regret may bind people to their intentions and increase likelihood of behavior because failing to act would be associated with aversive affect.

By asking people whether or not they would donate money, Obermiller and Spangenberg (2000) were able to increase the rate of donation success from 30.4% to 49%. Instead of focusing on whether a question is asked, Liu and Aaker (2008) examined effects of the question's content. In studying consumers' willingness to give to charitable causes, they found evidence for a "time-ask effect" whereby asking consumers whether they would like to volunteer time to a charity versus asking whether they would like to donate money, or not asking any intent question at all, led to greater levels of monetary contributions. They explained the effect due to mindsets activated by the initial mention of time versus money. Answering a question about volunteering time increased salience of the action's (giving to charity) emotional significance for respondents, who viewed the charity as a means toward their happiness. This led to a more positive inclination toward giving to charity and an increase in actual dollar contributions. This study provides a promising new direction to extend the scope of QBEs to understand how question content triggers processes influencing behaviors (see Bradburn, Rips, & Shevell, 1987; and Schwarz, 1999, for detailed discussions regarding the effects of question content on responses given by survey participants). Relatedly, Gollwitzer and Oettingen (2008) have proposed that whether the question targets the critical behavior directly or indirectly will determine how the effect unfolds.

Similarly, Stutzer, Goette, and Zehnder (2007) found that asking individuals to make a "strong active decision," that is, articulate whether they would be willing to donate blood at one of the selection of specific dates and times, increased the probability of donating blood by 8.7% relative to a control group. Goldstein et al. (2008) compared the efficiency of measuring behavioral intentions vs. explicitly forming implementation intentions (Gollwitzer, 1999) on enactment of both one-shot goals (voting on election

day) and open-ended goals (voting early) in either the short term (days) or the long term (months before). The authors found that intention measurement increased voter turnout for open-ended goals and for nearer one-shot goals but not for distant one-shot goals. Implementation intentions, on the other hand, were efficacious for both goal types over both lengths of time.

Spangenberg and Sprott (2006) found results consistent with the SPE, additionally demonstrating the moderating role of self-monitoring (discussed in detail in the next section). As this review makes clear, the SPE finding behavioral changes in socially normative directions is robust and has received wide support. In a meta-analysis of published and unpublished studies (through 1999), Spangenberg and Greenwald (1999) found an average effect size of .19, with a range of .08–.40. Including only SPE studies involving health-related behaviors, Sprott and Spangenberg (2006) reported an average effect size of .265.

SPE Studies Involving Risky Behaviors by Children and Adolescents

A number of recent studies have examined effects of questioning of adolescents on their risky behaviors. I include this line of research within the domain of SPEs because all the behaviors studied in this line, as well as the explanation advanced, have a significant socially normative component. Williams et al. (2006) studied whether asking undergraduates questions about future drug use changed self-reports of actual drug use. Relative to a control group that was asked about exercising, the experimental group that was asked to make a prediction regarding how often they would use drugs reported more drug usage (2.8 times vs. 1 time) two months later.

Fitzsimons, Nunes, and Williams (2007) examined the process by which these effects occur. Using a response latency task, they found that participants who had been asked how many times they were likely to skip class were much faster at categorizing "skip class" as positive in a response latency task when compared with a control group. However, their explicit attitude toward skipping class was negative. In a second experiment, they found that asking participants either about drinking more than two alcoholic drinks at one time in the coming week or about watching television instead of studying resulted in increased self-reported drinking (3.2 times vs. 1.2 times) and television watching (3.9 times vs. 2.7 times).

Williams et al. (2006) replicated these results by measuring actual respondent behavior. In one study, participants were asked how many times they were likely to be distracted from studying in the coming week or an unrelated control question. After a delay, participants

were provided with an opportunity to sign up for going to four movie screenings within a single week during the semester, a behavior that would result in a substantial distraction from studying. Those questioned about this "vice" behavior were significantly more likely to sign up for the movie screenings (76.6% vs. 53.1% in the control group). In another study, students who were asked how many classes they would miss during the semester did miss more classes (3.78 class sessions vs. 2.95 class sessions) than the control group.

What is striking about studies examining risky behaviors in adolescents is that they appear to be similar in all important respects to the self-prophecy studies that find normatively consistent results. The types of behaviors examined are similar, study participants comprise young individuals (usually undergraduates), and one can make a persuasive case that these individuals are likely to hold conflicting implicit and explicit attitudes for activities such as exercising, choosing low-fat snacks, or recycling, just as they do for skipping class or using drugs. So it is surprising that the pattern of results obtained in this set of studies is diametrically opposite to the traditional self-prophecy research (see Gollwitzer & Oettingen, 2008; Schneider, Tahk, & Krosnick, 2007; Sherman, 2008; Spangenberg et al., 2008, for recent critiques of this line of research).

The controversy and the conflicting findings make this an exciting area with a number of opportunities to resolve inconsistencies and advance our understanding of the SPE. For instance, one explanation could be the manner in which responses are elicited. Most (but not all) self-prophecy studies utilize binary (yes/no) responses, whereas the risky behavior studies usually assess frequency of future behavior. It could be that these different response formats favor occurrence of one or the other process (e.g., cognitive dissonance vs. implicit attitude activation) leading to opposite effects on behavior.

Theoretical Explanations for the Self-Prophecy Effect

Unlike the MME, SPE studies appear to tap into the same phenomenon irrespective of the methodological approach used. Regardless of whether studies are done in the lab or the field, there is one leading explanation for the traditional (normatively consistent) SPE's occurrence: *cognitive dissonance*. In this section, I discuss cognitive dissonance first, followed by a brief consideration of other candidate explanations, and finally the account advanced for normatively inconsistent effects for risky behaviors.

Questioning Produces Cognitive Dissonance

The leading explanation for SPEs is that they are a manifestation of cognitive dissonance. The dissonance-based view of self-prophecy holds that providing a self-prediction about one's future behavior increases both salience of social norms associated with the behavior and one's prior failure to perform the behavior in a socially normative manner. Stated differently, when the prediction request is answered, respondents simultaneously become cognizant of what they should do as well as what they have done or not done in the past. Assuming that these cognitions are inconsistent (e.g., ''I know what a good, moral and competent person should do, but I have failed to do so in the past or haven't done it as often as I should have. Now that I have an opportunity, I will do what I should have done all along''), the self-prediction task directly confronts the individual's self-concept as a moral, competent, and good person. Given that such a person should behave in line with social norms but has not always done so in the past, cognitive dissonance is elicited through self-prediction (Aronson, 1992). Once activated, dissonance serves as an aversive state, motivating behavior in the direction of social norms (Spangenberg et al., 2003; Spangenberg & Sprott, 2006). Although yet untested, it could also be that self-prediction increases the availability of prior failed behavioral attempts (Folkes, 1988) contributing to self-concept confrontation.

The cognitive dissonance explanation is distinct from the explanations advanced for either the lab-based or field-based MME. The conjunction of *normative beliefs*, ''I *should* behave in a certain way,'' *self-concept*, ''… because I am a competent and morally good person,'' and a *behavioral discrepancy*, ''I have not behaved this way in the past'' is essential to instigating postquestioning action according to a cognitive dissonance explanation (Perkins, Smith, Sprott, Spangenberg, & Knuff, 2008). None of these elements plays a role in MMEs because there is no normative influence on the behaviors involved. However, at an abstract level, it can be argued that the raised awareness of these different cognitive structures constitutes a form of inference-making from responding to questions. A second point worth noting is that although most of the existing studies have focused on social norms (however see Chandon et al., 2007, for an exception), an identical process would unfold for a behavior that is of *personal normative significance*, for example, accomplishing a personal goal such as a resolution that one has set for oneself. In such cases, even if there is no socially normative significance, one would still expect questioning to result in cognitive dissonance and influence behavior in the direction of the personal norm held by the respondent. This possibility needs to be explored in greater depth.

A number of studies support operation of the cognitive dissonance-based process. Spangenberg et al. (2003, Studies 3A and 3B) found that study participants viewing an advertisement containing a prediction request reported significantly lower levels of psychological discomfort after making a prediction about other people's behavior, compared with a group not making this latter prediction. Such a finding is in line with cognitive dissonance theory that posits that when a person encounters a threat to one's self-esteem, he or she will bolster self-evaluations through downward comparisons with others (e.g., Wills, 1981). In their fourth study, Spangenberg et al. (2003) found that giving participants the opportunity to affirm values central to their self-concept through selecting core values (from a supplied list) reduced levels of psychological discomfort relative to those who were not given the self-affirmation opportunity. Many of the studies examining moderators of the SPE (discussed in the next section) also provide evidence for cognitive dissonance.

The operation of cognitive dissonance in the SPE's occurrence raises interesting questions. For instance, Sprott et al. (2006a, 2006b) observe that it is not yet clear whether the effect would occur for behaviors that have a physiological component (e.g., nicotine dependence) that inhibits the effect of social norms (e.g., smoking, drug addiction, etc.). Under such circumstances, individuals may not feel personally responsible for the aversive consequences of those actions, attributing them to uncontrollable physiological forces. Similarly, if perceived obligations, permissions from respected individuals or groups, or peer pressure dampen the force of cognitive dissonance, the SPE may diminish. On the flip side, factors that amplify dissonance such as intensifying social norms should accentuate the SPE.

Questioning Activates a Normative Social Identity
Perkins et al. (2008) recently argued that the SPE can be explained by the activation of a relevant normative social identity by questioning. Defining social identities as self-definitions that incorporate knowledge about a particular group that an individual belongs to or identifies with (Brewer, 1991), the authors proposed that answering a self-prediction question about a normative behavior, say recycling , should result in the activation of a "recycling" social identity that directs behavior. Positioning this explanation as an alternative to the cognitive dissonance account, the authors argued that unlike dissonance, which lowers self-esteem, activating a positive social identity should increase self-esteem. In two experiments, one in which implicit attitude for recycling was measured, and in the other in

which initial self-esteem was manipulated, the authors found that making a self-prediction resulted in greater self-esteem, which is inconsistent with a cognitive dissonance explanation. Interestingly, the authors did not find differences in explicit recycling attitudes between conditions and concluded that "attitude accessibility is not a compelling explanation for self-prophecy" (p. 446). As of now, it is unclear when this process underlies the SPE's occurrence instead of cognitive dissonance. One possibility is that for certain types of normative behaviors that are central to one's social identity due to various reasons such as past experiences or salient beliefs, the identity activation process comes into play.

Questioning Heightens Self-Awareness
Closely related to cognitive dissonance theory, Spangenberg and Greenwald (1999) invoked self-awareness theory (Duval & Wicklund, 1972) to explain SPEs. According to this theory, the presence of self-focusing stimuli heightens the individual's self-focused attention, producing a state of objective self-awareness that involves attention to discrepancies between actual and ideal selves. The negative affect resulting from the perception of this discrepancy, in turn, leads the person to attempt to reduce the discrepancy. Greenwald and Spangenberg (1999) note the parallels between cognitive dissonance theory and self-awareness theory, observing that the two are "probably not distinguishable" (p. 84) in explaining SPEs.

Questioning Evokes Socially Acceptable Scripts of Behavior
This account for the SPE is consistent with the behavioral simulation explanation for the MME and was advanced by Spangenberg and Greenwald (1999). It is one area where the MME and the SPE intersect. This explanation posits that for socially desirable behaviors, even though the individual may have preexisting scripts for a target situation, answering the question of what one *will do* is likely to produce a socially acceptable script, which will be mentally rehearsed by the individual. In cases where a preexisting script is lacking, social desirability of the target action will still lead participants to predict performance of the more socially desirable option. In either case, when the time to enact behavior arrives after being questioned, the socially acceptable script is likely to be enacted even overriding the usual script in the former case.

Questioning Increases the Effect of Implicit Positive Attitudes
Fitzsimons and Moore (2008) have persuasively argued that individuals, particularly adolescents and children, hold complex and ambivalent

attitudes toward risky behaviors. As a result, the process underlying the effects of questioning on risky behaviors is distinct. At the conscious or explicit level, survey respondents are aware that the risky behavior could have negative consequences eventually, if not right away. Nevertheless, they are drawn to the behavior implicitly, at an unconscious level, often holding a positive implicit attitude toward its enactment. Emerging research (described earlier; e.g., Fitzsimons et al., 2007) indicates that in such cases, asking questions about risky behaviors toward which they hold both positive and negative attitudes often results in the positive, more implicit attitude guiding the actions of respondents and increasing enactment of risky behavior.

Despite its merits in accounting for the SPE when the respondent's behavior after questioning conflicts with his or her explicit attitude regarding the behavior, it is worth noting this explanation is far from well-accepted (see Sherman, 2008, for a detailed critique). In addition to traditional SPE studies, other research examining risky behaviors has found different results. For instance, in a study of playground behaviors among children aged 7–13 years, Morrongiello and Mark (2008) found that getting participants to advocate for safe-play behaviors while thinking about past failures to play safely on grounds resulted in reductions in self-reported risky play behaviors up to two months later. Thus, risky behavior change was in the socially normative direction. Other studies have found increased use of condoms among college students (Eitel & Friend, 1999) and a greater propensity to obey speed limits (Fointiat, 2004). Sherman (2008) describes other studies that show risky behaviors among adolescents after questioning.

These conflicting results suggest that our current state of knowledge regarding the conditions under which respondents behave in normatively consistent ways after answering questions, and when they behave in opposite ways is incomplete. Rather than categorizing an entire demographic group of individuals, that is, adolescents, as having positive implicit attitudes toward risky behaviors, it might be productive in future research to identify the conditions that foster presence of conflicting implicit and explicit attitudes.

Moderators of the Self-Prophecy Effect

Several studies have examined boundary conditions for the SPE's occurrence. The roles played by normative beliefs of participants, their self-monitoring levels, the manner in which the self-prediction task is

performed, respondent characteristics such as gender, and debiasing through providing advance warning have all been studied and are discussed here.

Normative Beliefs of Participants

Sprott et al. (2003) argued that the individual's normative beliefs regarding the target behavior, defined as beliefs relating to what is socially desirable or appropriate to do, are critical in the SPE's occurrence. They hypothesized that normative beliefs would act as a moderator of the SPE such that people with more strongly held normative beliefs would be more likely to exhibit an SPE when compared to those with a weaker normative stance on the issue. In two studies testing consumption of low-fat versus regular fat snacks, and participating in an assessment of one's health and fitness, they found support for their hypothesis. In summarizing their results, Sprott et al. (2003) noted:

> The current research provides evidence that the self-prophecy effects appears to operate best when people possess strong beliefs about what is normatively right or wrong. Consequently, asking people to make predictions that are counter to these beliefs is unlikely to be effective. Indeed, because the self-prophecy effect appears to be driven by people's personal beliefs about what is appropriate, the most fundamental requirement for self-prophecy to manifest is a population (or subset thereof) that shares such beliefs. For example, a prediction request will not likely change the behaviors of heavy smokers, people who often litter, nonvoters, and those who do not engage regularly in exercise unless they become convinced that their current lifestyle with regard to these activities is inappropriate. (p. 429)

An interesting extension to this research would be to examine the interactions between personal beliefs and normative beliefs, and the conditions where they mutually enforce and contradict each other in contributing to the SPE.

Levels of Self-Monitoring

Spangenberg and Sprott (2006) studied the moderating role of an individual's level of self-monitoring on the SPE. Self-monitoring refers to the relative extent to which the individual's behavior is influenced by dispositional versus situational factors. For high self-monitors, behavior is influenced to a greater degree by situational factors, whereas the behavior of low self-monitors is influenced to a greater extent by dispositional factors. Low self-monitors are also influenced by messages appealing to their values (i.e., attitudes serving a value-expressive function), whereas high

self-monitors are influenced via appeals to their status (i.e., attitudes serving a social-adjustive function).

The authors argued that the process of confronting the discrepancy between values and prior action and reducing it through action should be more effective on low self-monitors because their attitudes are generally based on values, in contrast to high self-monitors, who base behaviors and attitudes mainly on situational factors. Consequently, they hypothesized that the level of self-monitoring should act as a moderator of the SPE such that it is more likely to influence low versus high self-monitors. Two lab-based studies involving participation in a 15-minute free health and fitness assessment, and donating a few hours of time to the American Cancer Society, provided support to this moderation hypothesis.

Characteristics of the Self-Prediction Task

It appears that the manner in which the self-prediction task is performed also affects the SPE's strength. Both specificity and degree of cognitive elaboration have been shown to act as moderators. Sprott et al. (2004) examined the role played by specificity of the prediction request. Their study involved participation in an assessment of one's overall physical fitness and health. In the specific prediction condition, participants were asked to predict whether they would participate in a voluntary health and fitness assessment, whereas the general prediction question asked about participation in one or more health and fitness activities. Their results revealed that although no one from the control or general prediction groups signed up for the assessment, 17.4% of those in the specific prediction condition signed up. The authors concluded that a specific prediction request is more likely to elicit an SPE than a general prediction request.

Van Kerckhove, Geuens, and Vermeir (2009) showed that participants with well-formed, that is, cognitively elaborated self-predictions engaged in the focal behavior of choosing environmentally friendly products to a greater extent when compared with those who had ill-formed self-predictions, that is, they were distracted during the self-prediction task.

Respondent Characteristics

There is also some (although mixed) evidence from extant studies that the respondent's gender can play a role in the SPE's occurrence. Spangenberg and Greenwald (1999, Experiment 1) found that for implicit gender stereotyping (a greater likelihood of judging famous individuals as male rather than female given their last names), males were less likely to

stereotype when they were asked to predict what they would do relative to a control group. Females did not show this effect. However, they did not find this effect of gender in another study. More research is needed to better understand individual factors (e.g., including gender) that affect sensitivity to the SPE.

Debiasing by Providing Advance Warning

Williams et al. (2004) showed that warning respondents in advance that responding to questions can change behavior dramatically reduced the question's impact on behavior. Respondents became more wary of the questioner, were more likely to perceive the question as an attempt to persuade them, and were able to consciously correct for the influence of the question. However, simply instructing respondents to think more deeply about questions, without an explicit warning that they may be attempts to influence, appears to have a counterproductive effect. In a study of voting behavior, Fitzsimons and Shiv (2001) instructed respondents to reflect about the question they were being asked. In this case, instead of diminishing impact, those asked to think more deeply actually showed a stronger effect of being asked the question versus a control group that was not given this instruction. These findings recommend that if the researcher's goal is to minimize the QBE's effect on respondents, warnings about the effects of questions should be given in advance and should spell out their specific effects, rather than just providing broad instructions to think deeply.

Summary of Self-Prophecy Effect Research

Based on this review, a large number of studies have found evidence for the SPE in socially normative directions. Upon being asked to make a self-prediction, individuals realize they have not been acting as they should have, experience cognitive dissonance, and change their actions, behaving in line with social norms. The corpus of SPE findings make it clear that such a cognitive dissonance-based explanation applies to laboratory as well as field-based self-prophecy studies. Recent findings on normatively incon-sistent behavior due to the clash of positive implicit and negative explicit attitudes regarding risky behaviors are intriguing, but they raise more questions than provide answers at this point.

PRACTICAL IMPLICATIONS OF
QUESTION–BEHAVIOR EFFECT RESEARCH

Researchers of all social science disciplines rely on questioning to gather data and are affected by the QBE. In this section, I discuss its significant practical implications including the assumption of measurement separability, assessing the net impact of survey research, using self-prophecy to encourage socially desirable behaviors, and understanding the implications of asking questions regarding risky behaviors to teenagers. The discussion is organized by implications of the MME, followed by implications of the SPE.

Implications of Mere Measurement Effect Research

Questioning the Assumption of Measurement Separability
When conducting surveys, marketing researchers routinely make the assumption of *measurement separability* (i.e., the survey process only elicits existing opinions of consumers); it does not *form* or *influence* their opinions or behaviors in any way. In fact, segregating consumer research and political polling from sales or persuasion activities has always been one of the holiest grails of marketing research practice. Any attempt to combine these activities not only raises ethical concerns (for instance, by violating the code of ethics of the American Marketing Association), but attempts to do so have been outlawed since the 1990s by legislators in the United States, through laws such as the Telemarketing Consumer Fraud and Abuse Prevention Act. The scope and range of findings regarding the MME and the SPE discussed in this chapter invalidate the assumption of measurement separability. Even when marketing researchers are ethical in their intent and execution and have no interest in influencing respondents, they still end up having multifaceted and long-term effects on consumers (see Machin and Fitzsimons (2005) for a detailed discussion of this issue).

At first blush, the findings discussed here appear to bode well for certain types of consumer research activities such as customer satisfaction measurement. For instance, findings on the positivity effect imply that even customers expressing dissatisfaction will behave more relationally toward the firm subsequently (e.g., Dholakia et al., 2004). Likewise, long-term studies of survey effects usually find overall positive effects (Chandon et al., 2004; Dholakia & Morwitz, 2002). However, these findings also raise thorny questions not only about the ethics of consumer research but also regarding the accuracy of forecasting models run using survey data (Chandon,

Morwitz, & Reinartz, 2005; Heij & Franses, 2006; Morwitz, 2005). A number of unanswered questions emerge because of the QBE: Through what means is it possible to minimize or reverse the effects of questioning on consumers? In what way should anti-sugging laws be modified to reflect reality? How best should practices for conducting survey research promoted by the DMA, the CASRO, and other industry groups acknowledge occurrence of the QBE? By and large, academic researchers have bypassed these issues thus far. Practitioners, too, have not paid much attention to these questions.

However, recent studies have suggested ways to correct for MMEs in forecasting models. Chandon et al. (2005) proposed the following three-stage procedure. In the first stage, available descriptive variables from surveyed customers, such as their demographic characteristics, are used to predict the presurvey latent (unobserved) purchase intentions of both surveyed and nonsurveyed consumers. In the second stage, the strength of the association between the presurvey latent intentions and the postsurvey behavior for the two groups is compared to assess the MME's strength. In the third stage, conversion schemes[4] (Jamieson & Bass, 1989) used for forecasting are adjusted to account for the measurement effect depending on its cause and strength.

Heij and Franses (2006) extended this approach to directly predict purchase behaviors. Purchase was operationalized as a binary (yes/no) outcome. In their analysis of easy-to-prepare food products in two super-markets, they found that forecasting models that neglected either the binary character of the data or the endogeneity of the measured intentions tended to underestimate the MME. Despite these exceptional studies, designing a satisfactory strategy to reduce influences on behavior and errors in predictions and to effectively communicate how these effects will influence different constituents such as consumers, managers, financial analysts, etc. remain open questions. In a broad sense, the implication of the QBE is that managers should be wary and cautious when conducting, interpreting, and using findings of consumer research studies. In a specific sense, they have to somehow adjust for the MME's occurrence when predicting what the broader population of (unsurveyed) consumers will do.

Assessing the Net Impact of Conducting Survey Research for Organizations
Firms usually treat the cost of conducting survey-based research as an expense. The conventional wisdom is that survey expenditures are recouped when useful information obtained from respondents enables more informed decision making. The QBE challenges this fundamental assumption by showing that survey-based research can produce direct and measurable

benefits from changed respondent behavior. Specifically, because customers participating in surveys engage in greater purchase behavior in broad-based ways and over extended periods of time compared with nonparticipants, the firm generates an incremental revenue stream that can exceed the survey's cost.

The firm also accrues other substantial benefits. For example, a number of studies have shown that customers participating in surveys are more responsive to the firm's promotional efforts, increasing the efficacy of its other marketing programs (Borle et al., 2007; Dholakia et al., 2010). Positivity effect research has shown that survey participation generates long-lasting positive inferences regarding the firm (Dholakia et al., 2004). Past research has also shown that survey participants are less likely to defect to competitors (Dholakia & Morwitz, 2002), resulting in yet a third incremental revenue stream to the firm sponsoring the survey. All these outcomes are quantifiable, and their combined economic effects may offset much, if not all, of the cost of the survey itself. In many cases, the net impact of conducting a survey will be positive. Alternatively, the revenue streams may be used to determine the return on investment of the research expenditure.

Take the case of one particular large firm analyzed by Dholakia et al. (2004). Although some numbers in this illustration were disguised for purposes of confidentiality, this analysis is instructive in how to assess the net impact of a survey after accounting for the MME. Their approach to approximating the value of the customer satisfaction measurement program to the firm had two elements on account of survey participation: (1) the reduction in customer defection and (2) the increase in annualized customer spending.

The benefits of defection reduction were decomposed into (a) more customers subsequently present within the firm's customer base and (b) a lengthened average customer life span. Dholakia et al. (2004) estimated the increase in customers owing to the survey program by multiplying the number of customers participating by their higher retention rate. They calculated the lengthened average customer life span with a simple formula relating customer turnover and average life span, which states that the inverse of the annual defection rate of a group of customers is equal to their average life span. Although this operation results in a substantial increase in years of additional customer life for survey participants, for purposes of the illustration they ignored the effect of increased customer tenure, focusing only upon the benefits realized in the first year following survey participation.

The final element of their calculation of economic impact was the increase in average spending by survey participants, which they obtained directly from the data in their study. In applying the calculations to the firm's data, they disguised the survey data for purposes of confidentiality by multiplying observed values by arbitrary constants. Also for reasons of confidentiality, the economic impact estimation results are illustrated for three different assumed annual rates of company-wide customer defection (10%, 15%, and 20%), rather than revealing the firm's actual customer defection rate. Note that such an analysis is conservative because it did not include benefits such as increased responsiveness to the firm's promotions and greater affinity to the brand due to positive inferences. As can be seen from the analyses summarized in Table 4, the economic impact of the survey program was significant and positive for all three levels of customer defection rates considered.

As this illustration indicates, conducting a satisfaction survey could have net positive impact for many firms. In such cases, the more accurate way of thinking about survey-based marketing research is that it is an investment in strengthening the firm's relationship with customers rather than a cost to gather customer opinions. Nevertheless, the limits of these positive effects remain presently unknown. It is still not clear how much research is too much, or whether there are certain conditions under which the effects from survey participation can turn negative. Research examining effects of repeated satisfaction survey participation on customer behavior as well as surveying different proportions of the customer population is sorely needed to help answer these questions.

Table 4. Illustrative Analysis to Demonstrate Economic Impact of Survey Participation.

	Assumed Customer Defection Rate		
	10%	15%	20%
a. No. of satisfaction survey participants	374,920	374,920	374,920
b. Reduction in defection rate	62%	62%	62%
c. Saved customers (a*b)	23,160	34,740	46,320
d. Increase in customer life span	16.16 years	10.77 years	8.08 years
e. Increase in annual spending	$12.23	$12.23	$12.23
f. Total gain in revenue, first year	$2,255,283	$3,382,925	$4,510,566
g. Annual survey expense	$2,049,675	$2,049,675	$2,049,675
h. Net gain from survey participation (f – g)	$205,609	$1,333,250	$2,460,892
i. "Return" on satisfaction survey program	10.0%	65.0%	120.1%

Implications of Self-Prophecy Effect Research

Using the Self-Prophecy Effect to Encourage Socially Desirable Behavior
Getting an individual to provide a self-prediction regarding his or her future behavior is a powerful social influence technique (Spangenberg & Green-wald, 2001). As studies have shown, this approach is effective for a variety of normative behaviors and may equally apply to other behaviors not yet examined such as lowering personal debt and increasing saving, losing excess body weight, and practicing environmentally conservative behaviors. The finding that mass-communicated self-prediction requests are effective extends how the SPE can be utilized by practitioners. As one example, Spangenberg et al. (2003) suggested that with the help of advertisements, the sportswear retailer Patagonia might be able to increase sales of its eco-friendly products by asking its target consumers to make self-predictions regarding their support of environmentally friendly firms.

It is noteworthy that despite its practical significance, the effects of mass-communicated questioning have not yet been studied by MME researchers. For instance, instead of conducting costly telephone surveys, one can easily envision placing colorful postcard mailers or banners in retail stores, boldly lettered with the question ''Ask Yourself: Are You Satisfied With Our Service Today?'' obtaining the MME via a more cost-effective approach. Research studying whether mass-communicated questioning generalizes to field-based MME, and if so, under what circumstances, deserves further attention from QBE scholars.

Implications of Asking Questions Regarding Risky Behaviors to Teenagers
Fitzsimons and Moore (2008) argued that in a public health context, screening adolescents for risky behaviors such as drug use, alcohol drinking, unsafe sex, etc. could potentially increase their subsequent levels of such behaviors. They noted that screening and surveillance of teenagers is widely practiced with tens of thousands of teenagers being questioned by various governmental and private organizations on an annual basis. Whereas individual screening assesses adolescents on a one-on-one basis for risky behaviors when they come in contact with the medical system (e.g., when they visit the doctor), population-based surveillance refers to large-scale survey-based studies conducted to determine the prevalence of health risk behaviors in the population at large. Fitzsimons and Moore (2008) note that these procedures largely ignore the possibility of occurrence of the QBE or its potential consequences. Consequently, they observe that ''Instead of being purely innocuous information gathering tools, surveillance surveys

have a potential downside risk which is quite dangerous if not followed up by more thorough interventions. These questions function as form of influence that operates largely outside the respondent's ability to detect or correct" (p. 90).

To counteract the potentially serious effects of questioning on children and adolescents, public health and medical officials may use one of the two approaches when asking these consumer groups about their risky behaviors: (1) follow up the questioning with an appropriate intervention, or (2) exercise care, and utilize known findings to ask minimally influential questions. Based on the fact that the goal of individual screening is to identify risky behaviors and treat them, Fitzsimons and Moore (2008) observe that the earlier the medical professionals intervene, the better and cheaper will be the outcome. They offer several suggestions for effective interventions, including an emphasis on preserving and respecting adolescent autonomy, avoidance of categorical rules or statements about not engaging in risky behaviors, and their implementation in schools or communities after they have been tested.

In cases where providing interventions after screening is not possible, such as for large-scale surveillance studies, Fitzsimons and Moore (2008) suggest altering the survey itself to provide advance warnings, having the respondent commit to not engaging in the behavior, and changing the target and framing of the question, all of which have been shown by prior QBE research to minimize the effect of questioning on subsequent behaviors (e.g., Fitzsimons et al., 2007; Levav & Fitzsimons, 2006). In summary, much research is needed before we can fully understand the scope and direction of the effects of questioning on risky behaviors of adolescents, and specific ways to minimize any adverse effects that occur.

CONCLUSION

The QBE challenges basic assumptions of researchers that use a questioning methodology to assess internal states of individuals and predict their future behavior. Over the last 15 years or so, it has emerged to become a vibrant and impactful research area within marketing that is amenable to multiple perspectives and research emphases. During this time, research on the QBE has coalesced into two distinct streams, the MME dealing with purchase behaviors without normative significance, and the SPE concerned with socially normative behaviors.

In spite of the recent attempt at integration, throughout this critical review, I argued that there are fundamental differences between the two effects that preclude the complete merging of the areas. Not only are the types of behaviors studied different in the two cases, the underlying processes, many of the boundary conditions, and the practical implications are unique. Whereas the primary process supporting occurrence of the SPE is cognitive dissonance, increased attitude accessibility is the most favored explanation for the lab-based MME, and the generation of inferences from survey participation supports the field-based MME's occurrence.

The moderators of the effects are also different. The consumer's experience level (in the product category and with the firm), firm characteristics such as whether the store is company- or franchisee-owned, and behavior characteristics facilitating representation of the behavior have been shown to moderate the MME, and participants' normative beliefs, levels of self-monitoring, and specificity of the prediction request are the SPE's known moderators. Respondent characteristics have been shown to moderate both effects, but even in this case, researchers have found some gender differences in occurrence of the SPE, but none for the MME. These differences are summarized in Table 2.

For the sake of conceptual clarity and to advance knowledge regarding the QBE most efficiently, it seems prudent to retain the distinct labels of the two effects, rather than abandoning them in favor of the common "Question–Behavior Effect" label. In fact, because of the distinctions, I suggested that researchers should clearly specify which area they are building on and contributing to when developing hypotheses, designing studies, and interpreting their results. Furthermore, even within each effect, there are distinct streams (see Table 3) that are important to distinguish between in future research.

Although the two effects have largely distinct domains, there are some explanations for mere measurement and self-prophecy which do overlap, the most notable of which is behavioral simulation. Any behavior, whether of socially normative significance or not may be simulated or imagined when the respondent has to answer questions regarding its future enactment, increasing its processing fluency, and enhancing likelihood of its subsequent enactment. Furthermore, although yet untested, it seems reasonable to expect that such a process should be insensitive to how questions are phrased, and by what means they are asked. Furthermore, there is recent evidence that repeated self-prediction increases strength of the SPE (Van Kerckhove et al., 2009), analogous to the polarization effects sometimes found for the MME.

It is only when we consider what happens *in toto* when a question is asked that differences between the two effects begin to emerge. For instance, in addition to behavioral simulation and implementation intention formation, we may expect a motivational boost from cognitive dissonance to the extent that the behavior entailed is socially normative and the respondent perceives a discrepancy between his or her past behavior and normative beliefs. In contrast when personal interest is high or a long-standing relationship with the firm exists but the behavior has no normative significance, inference-making will likely contribute to the effect of questioning. As this discussion suggests, rather than the outcome of a single process, mere measurement and self-prophecy are each likely to be driven by a combination of psychological processes, which, depending on the individual and situation, interact in synergy or opposition, to influence behavior.

A common concern, applicable to both field-based mere measurement and self-prophecy research is the problem of *respondent self-selection*. According to this criticism, only certain types of respondents, such as those with an avid interest in, or an extreme opinion regarding the focal issue, or those who generally like to answer surveys, agree to respond to the researcher's questions. Consequently, the critics argue that the QBE is a manifestation of the atypical cognitive processing and behavior of these respondents rather than that of the entire relevant population. For instance, some critics suggest that because of the inherent differences, satisfaction survey respondents would have purchased more than the control group even in the absence of the question manipulation. This is a serious concern regarding much of QBE research and is applicable to all field-based studies.[5] One way that QBE researchers respond to the self-selection criticism is by trying to increase the survey's response rates. When higher response rates are achieved, they are used to argue that the self-selection bias is minimized or is less of a concern in their particular study. In many cases, QBE researchers do not consider the issue of self-selection bias at all.

Recent research by Anderson, Hansen, and Tripathi (2009) specifically studied the impact of self-selection on the field-based MME. The authors provided a methodology that not only controls for *self-selection bias*, but also for *targeting bias*, which they defined as the possibility that the researcher targets surveys to particular nonrepresentative subsegments of individuals within the population. Intriguingly, their study conducted with customers of a direct marketing firm found that after controlling for the targeting and self-selection biases, the MME diminished to insignificance for both purchase frequency and spending behaviors of customers. Similarly, another recent study conducted by Algesheimer, Borle, Dholakia,

and Singh (2010) found that when self-selection is taken into account and controlled for, previously strong positive behavioral effects of joining a customer community became insignificant for a majority of behaviors examined. Although prior QBE research has ignored or downplayed the seriousness of the self-selection bias, Anderson et al.'s (2009) study forcefully underscores the need to better understand the implications of this bias for occurrence of the QBE. Methodologically, these findings point to the importance of minimizing such biases via appropriate sampling and survey administration procedures, and for controlling for them during analysis.

Finally, despite the fact that the first QBE study appeared nearly 30 years ago, and its benefits to firms and other organizations have been confirmed time and again across a body of studies, it is surprising how many practitioners such as marketing researchers, opinion pollsters, and public health officials still remain unaware of this effect. As researchers with a vested interest in seeing our work have tangible impact on the profession we serve, it is incumbent upon us to take the time and effort to publicize our findings and explain their value to practitioners at every available opportunity. In this quest for creating awareness and publicizing our research, mere measurement and self-prophecy researchers can stand shoulder-to-shoulder and speak with one voice.

NOTES

1. The process dissociation procedure (Jacoby, 1991) involves task performance under two conditions: an ''inclusion'' condition in which the automatic and effortful processes work synergistically to contribute to performance, and an ''exclusion'' condition in which they oppose each other. The difference in performance between these conditions provides an estimate of the contribution of each process.

2. Of course, some purchase behaviors can be socially normative, for example, purchasing a gas-guzzler, sex toys, antidepression medications, etc. In such cases, the self-prophecy effect applies.

3. This study is classified as a self-prophecy effect study here because of the socially normative nature of the examined behaviors.

4. Conversion schemes are specific rules to convert purchase intentions into predictions of behavior (Jamieson & Bass, 1989). For example, a five-response category purchase intention question may result in the use of a ''75%–25%–10%–5%–2%'' scheme, which specifies that 75% of consumers who stated that they would ''definitely buy'' (top box) will do so, 25% who stated they would ''probably buy'' will do so, and so on.

5. Note that this criticism is not applicable to lab-based studies of either mere measurement or self-prophecy, because in these cases, all participants complete the study and are randomly assigned to either the experimental or the control groups.

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CONSUMER COGNITIVE COMPLEXITY AND THE DIMENSIONALITY OF MULTIDIMENSIONAL SCALING CONFIGURATIONS

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ABSTRACT

This chapter addresses one aspect of the broad issue of the psychological foundations of the dimensions of multidimensional scaling (MDS) solutions. Using empirical data from three independent studies, it is shown that the dimensionality of MDS solutions is negatively related to individual differences in the level of cognitive differentiation and integrative complexity of individuals and positively related to the individual's ability to discriminate within dimensions. MDS dimensionality is also shown to be affected by a variety of task-related variables such as perceived task difficulty, consistency in providing similarity judgments, confidence, familiarity, and importance attached to the stimuli. The chapter concludes by raising the issue of whether MDS can be validly used to describe complex cognitive processes.

Multidimensional scaling (MDS) has become a very popular tool in marketing and the social sciences for identifying the basic dimensions individuals use to evaluate objects and persons and the relative positions of these entities with respect to these dimensions (Carroll & Green, 1997; Cooper, 1983; Green, 1975). Most marketing research on MDS has focused on technical refinements and discussion of the properties of the various ways of collecting and analyzing data (e.g., Whaley & Longoria, 2009; Desarbo, Atalay, Lebaron, & Blanchard, 2008; Lee, Sudhir, & Steckel, 2002; Kim, Chatterjee, Desarbo, & Bijmolt, 1999; Desarbo & Wu, 2001; Desarbo, Grewal, & Scott, 2008; Sinha & Desarbo, 1998; Desarbo, Young, & Rangaswamy, 1997; Bijmolt & Wedel, 1995; Chaturvedi, Carroll, Green, & Rotondo, 1997; Ghose, 1998; Cooper & Inoue, 1996; Day, Deutscher, & Ryans, 1976; Deutscher, 1982; Dillion, Frederick, & Tangpanichdee, 1985; Hauser & Koppelman, 1979; Holbrook, Moore, & Winer, 1982; Malhotra, 1987; Malhotra, Jain, & Pinson, 1988; Rao & Katz, 1971; Summers & McKay, 1976; Wipple, 1976). Little attention has, however, been paid by marketing researchers to the psychological foundations of the technique.

An important aspect of MDS that has been fairly overlooked of late, and the subject of some controversy, is the dimensionality of the derived configuration (e.g., Ghose, 1998; Steenkamp, Trijp, & Ten Berge, 1994; Glazer & Nakamoto, 1991; Arabie & Boorman, 1973; Beals, Krantz, & Tversky, 1968; Fraser, 1976; Kruskal & Wish, 1978; Schiffman, Reynolds, & Young, 1981). Traditionally, the dimensions of MDS solutions have been considered as corresponding to the basic attributes or characteristics underlying cognitive judgments of perceived proximity. An alternative view is to regard them merely as a sophisticated sort of descriptive statistics. That is, they need not, and perhaps do not, denote the basic characteristics that underlie the cognitive processes involved in the formation of similarity judgments.

In our opinion, the use of MDS should be regarded as a choice of a particular psychological theory about the data (Shepard, 1980; Johnson & Fornell, 1987). This point is forcefully made by Roskam:

> Those who employ multidimensional scaling, particularly in survey research are often almost ignorant of the psychological theory of the S-R structure which is implied by the scaling model. Recent development of ever more complicated scaling models makes the situation rather worse than better, because – in an attempt to fit the data more parameters and modalities are introduced of which it is unclear what they mean in terms of theoretical representation of certain aspects of the data. (Roskam, 1981, pp. 225–226)

If, indeed, the dimensions of configurations derived by MDS have more than statistical significance, then individual differences in information

processing as well as task-related factors may be expected to have an impact on the nature of MDS solutions obtained. Summers and McKay (1976) are two authors who have explicitly and cogently called for more research on this topic, emphasizing the role of individual differences. Of particular relevance to this chapter are their comments about the meaningfulness of MDS configurations. To quote them:

> Even though the idea of an MDS configuration as an estimate of an internal representation is highly qualified, it is assumed at least that the number and identity of the dimensions in a subject's configuration reflect the dimensions of his internal cognitive representation. However, the limited dimensionality of MDS configurations may reflect not the internal cognitive representation, but the short term memory constraints involved in providing direct similarity judgments. (1976, p. 290)

The dimensionality of MDS solutions can be expected to vary as a function of the following factors:

(a) The individual characteristics of the respondents. Some consumers have limited capacity to withstand the cognitive strain induced by certain information-processing tasks (e.g., Kardes, Posavac, & Cronley, 2004; Chen, Gully, Whiteman, & Kilcullen, 2000; Reeve & Hakel, 2000; Ackerman, 1987; Bettman, 1979; Capon & Davis, 1984; Childers, Houston, & Heckler, 1985; Lynch & Srull, 1982; Nisbett & Ross, 1980; Roedder John & Cole, 1986; Schaninger & Sciglimpaglia, 1981; Tversky & Kahneman, 1974). The research findings of behavioral scientists such as Zinkhan and Braunsberger (2004); Hooijberg, Hunt, and Dodge (1997); Carrillat, Riggle, Locander, Gebhart, and Lee (2009); Schroder, Driver, and Streufert (1967); Scott, Osgood, and Peterson (1979); and Streufert (1978) further point out the presence of wide variations among individuals in terms of the complexity of the cognitive structures and processes involved in making judgments about objects, person, and events. This literature suggests that cognitively complex individuals are willing and able to use more information than cognitively simple individuals. Hence, they can be expected to yield MDS configurations that will be different from the ones obtained from cognitively simple subjects.

(b) The ecological (i.e., the inherent) complexity of the stimulus objects (Cohen, 1978; Lazarus & Folkman, 1984; Nordgren & Dijksterhuis, 2009). MDS judgment tasks may be more or less complex depending on the number and nature of the characteristics possessed by each object and the extent to which the objects included in the stimulus set are very similar or different to one another along the possessed characteristics. Further, extant research, based on the principles of bounded rationality,

arguably suggests that most of consumer reasoning and preferences are constructive and not predetermined (Bettman, Luce, & Payne, 1998; Kardes et al., 2004). People do not have well-defined decision-making algorithms. Rather, people seem to construct them on the spot, based on the demands of the environment, the task at hand, and their level of motivation.

(c) Familiarity with the stimuli (Zaichowsky, 1983; Park, Mothersbaugh, & Feick, 1994; Carlson, Vincent, Hardesty, & Bearden, 2009). Research in developmental and educational psychology indicates that perceptions are initially quite simple and rather unorganized. As information and experiences accumulate, the individual will be able to develop more and more complex knowledge structures to bear on the particular judgmental task under consideration and will learn to transfer these knowledge structures from one stimulus domain to another (Alba & Hutchinson, 1987; Hayes-Roth, 1977; Kanwar, Olson, & Sims, 1981; Mitchell, 1982; Fiske & Taylor, 1991; Sujan, 1985; Cowley & Mitchell, 2003; Coupey, Irwin, & Payne, 1998; Zhou & Nakamoto, 2007).

(d) The affective and cognitive importance of the stimuli. Research in attentional processes and related areas has shown the importance of the perceived functional demands of the processing task in determining how finely a given judgment can be made (Bettman et al., 1998; Baker & Lutz, 2000; Johnston & Dark, 1986; Kahneman, 1973; Parasuraman & Davies, 1984; Posner & Marin, 1986). Of particular importance to this research is the degree of customers' vigilance or alertness (Baron, Vandello, & Brunsman, 1996; Assael, 1981, p. 135; Deaux & Farris, 1975; Erdelyi, 1974) or more generally speaking importance attached to the task (Novak, Hoffman, & Duhachek, 2003; Celsi & Olson, 1988; Block & Richins, 1983; Clarke & Belk, 1979).

The major objective of our chapter is to show that the dimensionality and stress values of MDS solutions are influenced by individual differences in cognitive complexity, that is, in differentiating, discriminating, and integrating information.[1] Toward this end, we discuss the theoretical foundations underlying these three constructs (differentiation, discrimination, and integration), with particular emphasis on their direct and combined role in analyzing and structuring multidimensional information. Based on the literature reviewed, specific hypotheses are identified. We next discuss the extent to which MDS dimensionality and stress values are also influenced by some task-related variables. Three different empirical studies examining these hypotheses are described. Finally, the implications of the

results obtained are discussed and some directions for future research in this area are proposed.

COGNITIVE COMPLEXITY

Cognitive style generally refers to ''a person's preferred way of gathering, processing, and evaluating information'' (Hayes & Allinson, 1998, p. 850). In the context of cognitive styles, the concept of cognitive complexity refers to the structural complexity of an individual's cognitive system (Zinkhan & Braunsberger, 2004; Hooijberg et al., 1997; Carrillat et al., 2009; Bieri, 1971; Mandl & Huber, 1978; Scott et al., 1979), which refers to the refinement of mental structures and configurations that are used to organize new and existing information. It is not based on the content but rather on the structures that are used by individuals for organizing this content. To paraphrase Streufert and Streufert (1978, p. 16), content refers to what consumers think, whereas structure refers to how they think about it. Because it reflects the degree to which stimuli are finely processed, cognitive complexity is a useful construct for examining the structural complexity (e.g., the number of dimensions) of MDS configurations resulting from similarity judgments. It is not, however, intended to measure individual differences in the identity of dimensions used when making these judgments.

Subjects may exhibit high complexity in one stimulus domain but low complexity in another, depending on the combined effect of individual and situational factors (Zinkhan & Braunsberger, 2004; Kozhevnikov, 2007; Burroughs & Mick, 2004; Crockett, 1965; Durand & Lambert, 1976; Linville, 1982a, 1982b; Scott et al., 1979). However, if the cognitive complexity exhibited by subjects in a variety of stimulus domains correlates as highly between domains as within domains, then it is reasonable to conclude that these people show a stylistic level of cognitive functioning. While the ''stylistic'' status of cognitive complexity has not received a final answer, extensive investigation of this and related issues by Scott et al. (1979) provide encouraging evidence.[2]

Following common practice (e.g., Goldstein & Blackman, 1978; Kozhevnikov, 2007; Sternberg & Grigorenko, 1997; Scott et al., 1979; Pinson, 1978), one may want to distinguish between three distinct aspects of cognitive complexity: differentiation, discrimination, and integration, specifically relevant in the context of MDS. Broadly defined, differentiation refers to the number of dimensions used by an individual in processing information. Discrimination refers to the number of separate conceptual

categories on a dimension. Finally, integration refers to the degree of interrelatedness of elements within a particular cognitive domain. These three aspects of cognitive complexity are examined in the following sections.

Cognitive Differentiation

The degree of cognitive differentiation is related to the number of independent dimensions an individual has available to him/her to differentiate stimuli (Bieri, 1971).[3] The more the number of available dimensions, the higher will be the degree of cognitive differentiation.

As their cognitive structures are more differentiated, individuals with superior cognitive differentiation skills have been shown to be better information processors particularly in situations where the information is multidimensional, unfamiliar, complex, and ambivalent (Adams-Webber, 1998; Adams-Webber, Schwenker, & Barbeau, 1972; Bieri, 1971; Domangue, 1978; Hussy & Scheller, 1977; Lilli & Rosch, 1977; Millimet & Brien, 1980; Neimeyer, Neimeyer, & Landfield, 1983; Petronko & Perin, 1970; Saine, 1976; Tripodi & Bieri, 1966; Wojciszke, 1979). Hence, individuals characterized by highly differentiated cognitive structures may be expected to have less difficulty in producing and consistently using the dimensions required to accommodate a set of objects, when asked to make pairwise similarity judgments (Scott et al., 1979). On the other hand, those low in cognitive differentiation may not be able to generate enough general dimensions to simultaneously accommodate all the brands in the stimuli set and may thus have to form a series of fractionated similarity judgments involving less general dimensions. As fractionated judgments will necessitate more MDS dimensions for representation, the following hypothesis is offered.

> **H1.** Subjects who are high (superior) in terms of cognitive differentiation would require fewer dimensions for representation of their similarity/dissimilarity data.

Two Preliminary Studies

As a preliminary effort, two independent empirical studies involving different subjects and stimuli were undertaken to examine H1. The first study involved deodorant, a low involvement product of low ecological

complexity, whereas the second one used cars, a more ecologically complex and high involvement product (Richins & Bloch, 1986; Shimp & Sharma, 1983).

In the first study, the subjects consisted of 152 female head of households drawn from a major metropolitan area in the United States. Subjects were presented with all possible (66) pairs of 12 brands of deodorants/antiperspirants. For each pair, the subjects were asked to indicate the extent of similarity/dissimilarity between the brands using a seven-point scale (1 = very similar, 7 = very dissimilar). Cognitive differentiation was measured by the consumer cognitive differentiation test (CCDT) (Pinson, 1975). This instrument is a consumer version of Bieri's Rep test (Bieri et al., 1966).[4] It has been shown to have satisfactory convergent and discriminant validity (Pinson, 1981).

The data for the second study were obtained from a sample of 90 management students in a major northeastern university. The stimuli consisted of 15 names of automobile brands.[5] The data obtained included individual similarity/dissimilarity judgments on all possible brand pairs and a measure of cognitive differentiation using the same instrument as in the first study.

The similarity judgments obtained in each study were analyzed at the individual level using Takane, Young, and de Leeuw's (1977) ALSCAL procedure. Individual configurations were obtained in one to five dimensions. To determine the best fitting dimensionality for each subject, the resulting stress values in different dimensionalities were analyzed via Spence and Graef's (1974) MSPACE procedure.[6]

H1 was tested by correlating the best fitting dimensionality (Negative Dimensional Integration Method, NDIM) of each subject's similarity judgments (as determined through MSPACE) with the relevant scores on the CCDT. The correlations of the best fitting dimensionality with cognitive differentiation were 0.1699 and 0.2805 for study 1 and study 2, respectively. Both correlations were significant ($\alpha = 0.05$). As higher scores on the cognitive differentiation test denote low cognitive differentiation skills, these correlations were in the expected direction. In addition, subjects were divided into high and low cognitive differentiation groups based on a median split of the distribution of CCDT scores. An examination using *t*-tests also indicated that subjects high in cognitive differentiation used significantly lower number of dimensions. Thus, the results of both studies were supportive of H1.

As the results of the two preliminary studies were encouraging, it was decided to further examine these findings using other measures of cognitive differentiation and to examine the two additional facets of the cognitive

complexity construct, namely, cognitive discrimination and cognitive integration as well as some of the similarity task-related factors described earlier. In the following, we present a theoretical discussion of these variables along with the results of a third, more comprehensive, empirical study.

Cognitive Discrimination

Cognitive discrimination refers to the degree to which a particular dimension is divided by an individual into a set of categories for distinguishing among stimuli. The concept of discrimination has been referred to in a number of ways by various authors – category width, equivalence range, breadth of categorization, attribute precision, coarseness and fineness of category, etc. All these terms refer to the individual readiness to use wide or narrow conceptual categories when classifying stimuli (Pettigrew, 1982). Broad categorizers require fewer categories to characterize their environment.

In the words of Pettigrew (1982): "Broad categorizers possess expansive views of similarity. They see 'the big picture' and show less concern with minute differences between stimuli. Narrows are just the opposite: they utilize strict definitions of similarity and concentrate on details" (p. 204). Congruent with this and very relevant to the focus of our research is a study of Huang (1981) that links category width to semantic categorization. This theory assumes that people chronically categorize stimuli either broadly into fewer categories or narrowly into a higher number of categories. Narrow categorizers are said "… to possess more differentiated semantic categories than broad categorizers and this difference is primarily due to the differences in judged semantic distances between category members" (p. 351). The broad categorizers' less attention to detail should then result in lower MDS dimensionality and lower stress values as proposed by the following hypotheses:

H2. Subjects who are broad categorizers would require a smaller number of dimensions for representation of their similarity/dissimilarity data as compared to narrow categorizers.

H3. Subjects who are broad categorizers would yield MDS configurations that have smaller stress values as compared to those who are narrow categorizers.

Cognitive Integration

Schroder and his colleagues (1967) describe integrative complexity as the ability of individuals to combine dimensions in a complex fashion. High levels of integrative complexity are associated with the ability to use a complex organizing structure to examine stimulus relationships. At the other extreme, integratively simple subjects use a more rigid and simple structure for organizing the processed stimuli information. Integration refers to the extent to which individuals are able to associate two or more orthogonal dimensions to produce a combined effect, which is established by the collective essence of each of the original dimensions (Streufert & Swezey, 1986, pp. 16–17).

When confronted with a decision task, integratively complex individuals are more active and efficient in their search for information (Karlins & Lamm, 1967; Larrèchè, 1974; Schneider & Giambra, 1971) and they can function at higher levels of information processing (Kozhevnikov, 2007; Bryson & Driver, 1972; Schroder et al., 1967). Henry (1980) demonstrated that integratively complex subjects were more accurate in making pairwise similarity judgments, and that accuracy was more affected by individual abilities than by the increase in complexity of purchase information. Hence, it seems reasonable to infer that the integratively complex individuals can form more integrated judgments of stimuli, which therefore require fewer dimensions for representation. On the other hand, the integratively simple individuals form poorly integrated judgments of stimuli, which thus require a larger number of dimensions for representation via MDS. Consequently, the following hypotheses were formulated:

H4. Subjects who are high in integrative complexity would require a smaller number of dimensions for representation of their similarity/dissimilarity data.

H5. Subjects who are high in cognitive integration would yield MDS configurations that have smaller stress values as compared to those who are low in integration.

To summarize, in this chapter, we study cognitive style-based individual differences in people. We argue that people with different cognitive styles employ different number of dimensions/attributes in perceiving and evaluating similarities and differences among stimuli. We look into three aspects of cognitive styles that are relevant to the number of dimensions that people use in perceiving objects. These are cognitive complexity,

differentiation, and integration and are most relevant from a marketing and MDS perspective.

Extant research assumes that every individual lies on a continuum from concrete to abstract. Individuals that have chronically developed and rely on low levels of cognitive complexity in analyzing stimuli tend to harbor lower levels of differentiation and integration, and hence are concrete (Kozhevnikov, 2007). Concrete individuals are more likely to discriminate stimuli into relatively higher number of categories with smaller widths. Likewise, individuals that chronically rely on high levels of cognitive complexity in analyzing stimuli also harbor higher levels of differentiation and integration and are considered abstract. Abstract individuals are less likely to discriminate stimuli finely and hence tend to categorize more broadly with wider category width.

Extant research initially conceptualized cognitive styles as an individual's ability (Zmud, 1979). The underlying assumption was that because people that are able to handle higher levels of cognitive complexity process information differently, and perform certain tasks better, than cognitively less complex individuals – the ability to process divergent information and evaluate numerous alternatives simultaneously. People, who tend to construe at a higher level of complexity tend to have higher tolerance for ambiguity in their environment (Rowe & Mason, 1987). Further, Neuberg and Newsom (1997) argue that individuals differ in their chronic desire for simple structure and that this difference has social-cognitive implications on categorization judgments and behavior. However, cognitive styles should not be misinterpreted as being correlated with intelligence level. Rather, cognitive styles should be interpreted as an individual's preferred style of interpreting stimuli and processing information.

In Appendix A, we provide relevant aspects of the summary of the technical refinements and applications in MDS presented in relevant works of research from 1994 through 2009 in the *Journal of Consumer Research*, *Journal of Marketing*, *Journal of Marketing Research*, *Marketing Science*, *International Journal of Research in Marketing*, and *Journal of the Academy of Marketing Science*. In Appendix B, we provide relevant aspects of summary of pertinent research in the cognitive styles domain (specifically research focusing on differences in perceived dimensions) presented in relevant works of research from 1995 through 2009 in the *Journal of Consumer Research*, *Journal of Marketing*, *Journal of Marketing Research*, *Marketing Science*, *International Journal of Research in Marketing*, and *Journal of the Academy of Marketing Science*. However, we did not find much relevant work that was undertaken in the domain of cognitive styles,

in these specific marketing journals. Given this, we also searched for relevant articles in the *Journal of Applied Psychology* and *Journal of Personality and Social Psychology* for Appendix B. In Appendix B, we provide our conjectures on how the variables identified in each of these articles may moderate the main effect hypotheses that we have presented in this chapter.

Next, we provide further insight into how these differences in cognitive complexity lead to specific implications for multidimensional scaling.

Differentiation and Discrimination as Antecedents of Integration

It is generally believed that differentiation and discrimination precede the integration task (Crockett, 1965; Schroder et al., 1967; Streufert & Swezey, 1986; Witkin & Goodenough, 1981). In their pure forms, cognitive differentiation and discrimination correspond to analytic processes, whereas cognitive integration represents a synthetic process (Streufert & Streufert, 1978, p. 283). As synthesis generally follows analysis, the integration of information will depend upon the level of differentiation and discrimination of the stimuli.

If differentiation and discrimination are not guided by an expected integrative process (Streufert & Streufert, 1978, p. 283), it is possible that individuals with excessively high differentiation (or discrimination) skill may develop and utilize an inordinate number of unintegrated dimensions (or categories). A person involved in differentiation or discrimination should be aware of the integrative characteristics or limitations of his/her cognitive structure with regard to most potential stimulus configurations, that is, she/he should know the extent to which integrative activity is feasible.

When judgmental attributes are involved, it is likely that refined distinctions among stimuli will be accomplished primarily by the proliferation of dimensions, that is, by high differentiation, rather than by the proliferation of categories along a single dimension, that is, by high discrimination (Scott et al., 1979, p. 69). This line of reasoning leads to the following hypotheses:

H6. Subjects who are high in cognitive differentiation and are broad categorizers would require a smaller number of dimensions for representation of their similarity/dissimilarity data as compared to those who are low in differentiation and are narrow categorizers.

H7. Subjects who are high in cognitive differentiation and are broad categorizers would yield MDS configurations that have smaller stress values as compared to those who are low in differentiation and are narrow categorizers.

THIRD EMPIRICAL STUDY

The stimuli used in this third study consisted of 20 brands of automobiles and the similarity/dissimilarity judgments on all possible pairs were obtained using the same seven-point scale used in study 2. Subjects were 119 students from a large southeastern university.[7] To provide convergent validation of earlier findings regarding cognitive differentiation, two other measures of cognitive differentiation were used in addition to the CCDT – Crockett's Role Category test and Scott's Listing and Comparing Nations task. In Crockett's (1965) test, individuals are required to identify eight different persons, each of whom fits a predetermined role, and then to describe each of these individuals listed as fully as possible in writing. The number of different dimensions in these protocols is viewed as a measure of cognitive differentiation. In the Listing and Comparing Nations procedure (Scott et al., 1979), individuals first generate a list of n nations that they think are important in world affairs and then sort them into as many groups as desired. Differentiation, or in Scott's words ''dimensional complexity,'' is measured as a function of the number of distinctions among stimuli using an information theory measure.

The measure of discrimination selected to test H2 and H3 was Detweiler's (1978) instrument. In contrast to other tests of discrimination, for example, Pettigrew's (1958) scale, Detweiler's measure is a nonverbal test.[8] To provide a test of H4 and H5, integrative complexity was measured using the impression formation test developed by Streufert and Schroder (1962). The test[9] is a major measure of integration and is reported to be highly reliable (Streufert & Driver, 1967).[10]

Results

The plan of data analysis was similar to that in the first two studies. However, in addition to the best fitting dimensionality (NDIM), stress values of configurations obtained in dimensions 2 to 5, denoted by STRESS2 to STRESS5, were also utilized as dependent variables. The correlations of the three measures of cognitive differentiation, cognitive discrimination, and cognitive integration with the best fitting dimensionality and stress values in dimensions 2 to 5 are given in Table 1. Higher scores on Scott's, Crockett's, and Detweiler's instruments as well as on the impression formation test indicate higher cognitive differentiation, discrimination, and

Table 1. Results of Study 3: Pearson Correlations of Cognitive Complexity Variables.[a]

Cognitive Complexity Variable	NDIM	STRESS2	STRESS3	STRESS4	STRESS5
Cognitive differentiation: CCDT	0.134[b]	0.1789	0.1950	0.1529	0.1101[c]
Cognitive differentiation: Scott	−0.2790	−0.3213	−0.3059	−0.2654	−0.2420
Cognitive differentiation: Crockett	−0.1848	−0.2809	−0.3160	−0.3001	−0.2582
Cognitive discrimination	−0.2535	−0.1734	−0.1281[b]	−0.1033[c]	−0.0682[c]
Cognitive integration	−0.1467[b]	−0.2287	−0.2611	−0.2668	−0.2779

[a]Unless otherwise stated, all correlations are significant at $\alpha = 0.05$.
[b]Significant at $\alpha = 0.10$.
[c]Not significant.

integration, respectively. All the correlations are in the expected direction and generally significant at $\alpha = 0.05$.

As before, an alternative examination of the differences between individuals high and low in terms of cognitive complexity was also conducted. For each complexity measure, the subjects were classified into the high or low complexity group based on a median split of the distribution of the respective test scores. The hypotheses with respect to cognitive complexity variables, H1–H5, were then tested by examining the differences between the groups using *t*-tests. To investigate the hypotheses with respect to individuals high in differentiation and broad categorizers, H6 and H7, the subjects were cross-classified based on differentiation and discrimination and the two groups of interest (high differentiation – broad categorizers; low differentiation – narrow categorizers) identified. The differences between these groups were then statistically examined using *t*-tests. These results with respect to NDIM and STRESS2 to STRESS5 were in the expected direction and, with a few exceptions, significant at $\alpha = 0.05$. In addition, differences in "high differentiation – broad categorizers" and "low differentiation – narrow categorizers," in terms of cognitive integration, were examined and found to be significant. The "high differentiation – broad categorizers" were significantly higher in the ability to integrate. Thus, these results provide further support for H1–H7.

SIMILARITY TASK-RELATED FACTORS

Having examined the structural characteristics of individuals as encompassed by cognitive differentiation, discrimination, and integration, we now

discuss the role of the task-related factors that were identified earlier as potentially influencing the dimensionality and stress of MDS solutions, namely, ecological complexity, familiarity, and product importance.

As the stimulus set complexity (ecological complexity) increases, consumers can be expected to experience more difficulty in performing the similarity/dissimilarity judgment tasks and in making consistent overall judgments. Subjects reporting difficulty should yield poorly structured similarity/dissimilarity judgments. Those reporting high consistency should yield better articulated similarity judgments. Likewise, those reporting higher confidence in providing the similarity judgments should produce more interrelated judgments. Although people are often overconfident in evaluating their knowledge and performance (e.g., Barber & Odean, 2001; Grieco & Hogarth, 2009; Gigerenzer, Hoffrage, & Kleinbölting, 1991; Fischhoff, Slovic, & Lichtenstein, 1977; Nelson, Gerber, & Narens, 1984), on the whole they seem able to monitor successfully the likely correctness of their responses at least for moderate-to-high involvement situations (e.g., Simonson, Huber, & Payne, 1988; Antil, 1983, Koriat, Lichtenstein, & Fischhoff, 1980; Hart, 1965; Forrest-Pressley, MacKinnon, & Waller, 1985; Wendler, 1983). Thus, the following set of hypotheses were offered:

H8. Subjects who report less difficulty in providing the similarity/dissimilarity judgments would require a smaller number of dimensions for representations of their similarity/dissimilarity data.

H9. Subjects who report less difficulty in providing the similarity/dissimilarity judgments would yield MDS configurations that have smaller stress values as compared to those reporting less difficulty.

H10. Subjects who report greater consistency in making the similarity/dissimilarity judgments would require a smaller number of dimensions for representation of their similarity/dissimilarity data.

H11. Subjects who report greater consistency in making the similarity/dissimilarity judgments would yield configurations that have smaller stress values as compared to those reporting better consistency.

H12. Subjects who report greater confidence in making similarity/dissimilarity judgments would require a smaller number of dimensions for representation of their similarity/dissimilarity data.

H13. Subjects who report greater confidence in making similarity/dissimilarity judgments would yield configurations that have smaller stress values as compared to those reporting lower confidence.

As product familiarity increases (Coupey et al., 1998; Zhou & Nakamoto, 2007; Fiske & Taylor, 1991; Rao & Monroe, 1988; Sujan, 1985; Maheswaran & Sternthal, 1990; Boster & Johnson, 1989; Alba & Hutchinson, 1987; Chi, 1983; Johnson & Russo, 1984; Marks & Olson, 1981), consumers generally become more expert at performing product-related tasks and at handling ecological complexity. More precisely, increasing familiarity would have the following positive effects:[11] (a) it reduces the cognitive effort required to perform the task; (b) the category structures used to differentiate objects become more refined, more complete, and more veridical, thus allowing finer distinctions; (c) it increases the individual's ability to restrict processing to relevant and important information (e.g., product attributes); and (d) it increases the ability to organize and elaborate on given information.

Familiarity mediates the ability of individuals to understand how product attributes are interrelated and to connect new facts with information already contained in the knowledge structures (Coupey et al., 1998). Therefore, familiarity positively affects the ability to organize complex information and to produce better integrated judgments. Beattie (1982) describes how expertise is supposed to influence similarity judgments: "Experts, with complex schemata, can isolate important product attributes and focus on both similarities and differences … novices only have the capacity to focus on product information in terms of overall similarity …. In addition, the elaborated schemata of experts allow them to chunk information … so that several components of information are viewed as a single representation in memory."[12]

This suggest the following set of hypotheses:

H14. Subjects who report high product/brand familiarity would require a smaller number of dimensions for representation of their similarity/dissimilarity data.

H15. Subjects who report high product/brand familiarity would yield MDS configuration that have smaller stress values as compared to those who have low product/brand familiarity.

Finally, it may be expected that the importance attached by the consumers to the stimuli will have an impact on the attention paid and the effort devoted to the task. As suggested by the literature (e.g., Chaiken & Maheswaran, 1994; Petty, Cacioppo, & Schumann, 1983; Baker & Lutz, 2000; Bettman, 1979; Burnkrant & Sawyer, 1983; Kagan, 1984; Kahneman, 1973; Kerr, 1973; Munch & Swazy, 1981; Wallsten, 1980), those who attach

greater importance to the stimuli are expected to process them in greater depth, that is, extract more information on one hand and also organize the stimulus set in a more structured and interrelated fashion on the other hand. The end result should be better formed and integrated MDS configurations. Therefore, the following two hypotheses were formulated.

H16. Subjects who attach higher importance to the stimuli would require a smaller number of dimensions for representation of their similarity/ dissimilarity data.

H17. Subjects who attach higher importance to the stimuli would yield MDS configurations that have smaller stress values as compared to those who attach lower importance.

Empirical Investigation

The third empirical study reported earlier was also designed to investigate the hypotheses concerning the task-related variables. In other words, the respondents used to test H1–H7 also provided data related to H8–H17.

To provide a test for H8 through H13, perceived difficulty of the similarity judgments were made, and confidence in providing the similarity judgments were measured on 7-point Likert-type rating scales. Three different measures of familiarity were obtained to test H14 and H15. These were familiarity with the various attributes of automobiles (FAMATT); familiarity with each of the 20 brands considered in the study (FAMALT); and an overall measure of familiarity with the 20 brands of automobiles (FAMAVG), which was measured using a 7-point scale as commonly employed in the literature.

Results

The hypotheses H8–H17 examining the effect of the perception of the similarity task-related variables on NDIM and STRESS2 to STRESS5 were tested in a manner similar to that described earlier for H1–H7. The simple correlations of these perceived task variables with the dependent variables are given in Table 2. All correlations are in the expected direction and generally significant at $\alpha = 0.05$.

An alternative examination of the differences between individuals high and low in terms of the perceived task variables was also conducted along the lines reported for the cognitive complexity variables. Again, the pattern

Table 2. Pearson Correlations of Task Related Variables.[a]

Dependent Variable	Perceptions of the Similarity Task						
	Difficulty	Consistency	Confidence	FAMATT	FAMAVG	FAMALT	Importance
NDIM	−0.1550	−0.1759	−0.1879	−0.2619	−0.1775	−0.2123	−0.1122[c]
STRESS2	−0.1604	0.2831	−0.2631	−0.2644	−0.2200	−0.1907	−0.1217[b]
STRESS3	−0.1492	−0.2471	−0.2377	−0.2851	−0.2206	−0.1808	−0.1503
STRESS4	−0.1780	−0.2726	−0.2628	−0.2979	−0.2217	−0.1858	−0.1720
STRESS5	−0.1744	−0.2436	−0.2334	−0.2957	−0.2170	−0.1683	−0.2053

[a]Unless otherwise stated, all correlations are significant at $\alpha = 0.05$.
[b]Significant at $\alpha = 0.10$.
[c]Not significant.

of significance observed for the task variables is essentially the same as that in Table 2. Hence, these results provide support for H8–H17. Since the simple analysis in the form of correlations and *t*-tests supported H1–H17, it was decided to further test these hypotheses using multivariate analysis.

MULTIVARIATE ANALYSIS

Results for H1–H7

The effect of cognitive differentiation, discrimination, and integration on NDIM and STRESS2 to STRESS5 was further examined by controlling for the effects of the perceptions of the similarity task using multivariate analysis. For this purpose, the variables representing perceptions of the similarity task, namely, perceived difficulty, consistency, confidence, FAMATT, FAMAVG, FAMALT, and importance were factor analyzed. The resulting factor scores were used as additional explanatory variables in regressing, separately, NDIM, STRESS2 to STRESS5, with each of the cognitive complexity variables. The results with respect to the significance of each complexity variable were essentially similar to those reported in Table 1.

Analyses of covariance were also conducted to control for the effect of the variables, which influence the perceptions of the similarity task on the dependent variables NDIM and STRESS2 to STRESS5. In each of the analyses of covariance, the grouping factor was the relevant cognitive complexity variable and the factor scores if the perception of the similarity task-related variables were used as the covariates. Again, the significance of

the cognitive complexity variables was essentially the same as those reported earlier. Hence, these results of multivariate analysis provide additional support for H1–H7.

Results for H8–H17

To control for the effect of the cognitive complexity variables, cognitive differentiation, discrimination, and integration scores were factor analyzed. The resulting factor scores were then used as additional explanatory variables in regressing the dependent variables (NDIM, STRESS2 to STRESS5) against the perception of the similarity task variables. These factor scores were also used as covariates in an analysis of covariance design in which the dependent variable was NDIM, STRESS2, STRESS3, STRESS4, or STRESS5 and the grouping factor was the relevant task-related variable. In all the analyses, the effect of the perception of the task variables, namely, difficulty, consistency, confidence, FAMATT, FAMAVG, FAMALT, and importance continued to be significant. Hence, the results provide further support for H8–H17. Fig. 1 depicts the overall plan for data analysis.

DISCUSSION

Findings and Implications

The three empirical studies reported here lead to several conclusions regarding the psychological foundations of MDS configurations.

A first conclusion concerns the relationship between the cognitive differentiation of subjects and the dimensionality of the MDS configurations resulting from their similarity/dissimilarity judgments. Some researchers have assumed that the number of dimensions present in an MDS analysis is positively related to an individual's ability to differentiate (Carraher & Buckley, 1996; Driver, 1962; Schroder et al., 1967; Scott et al., 1979; Sidanius & Ekehammar, 1977). In fact, some of these authors have gone to the extent of suggesting that MDS be used as a measure of cognitive differentiation. The assumption being that those who are complex in terms of cognitive differentiation would require MDS solutions of higher dimensionality for the representation of their similarity judgments.[13] The very few studies (Blackman, 1966; Fraser, 1976; Hayashi, 1979; Kehoe &
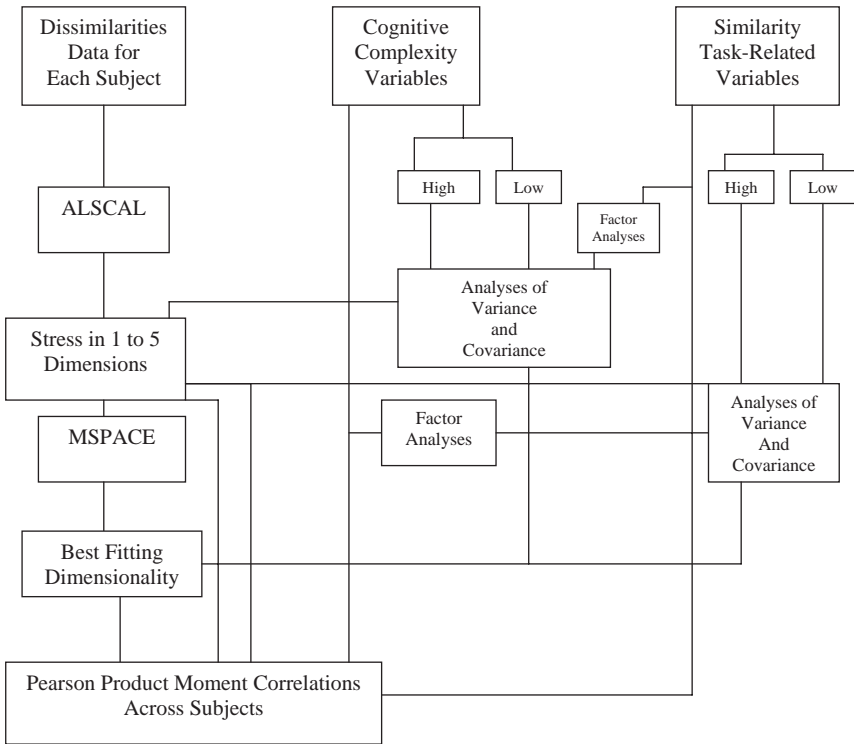
Fig. 1. Plan of Data Analysis.

Reynolds, 1977; Mueller, 1974; Peterson & Scott, 1983; Warr, Schroder, & Blackman, 1969a; Warr, Schroder, & Blackman, 1969b) that attempted to examine this relationship did not yield convincing results.[14]

Our own results cast serious doubts on the validity of MDS as a measure of cognitive differentiation. In all three studies, individuals high in cognitive differentiation required a smaller, and not larger, number of dimensions for representation of their similarity–dissimilarity data. Crockett (1965) critically examined MDS and strongly argued against viewing dimensionality of the MDS solutions as being a reflection of the cognitive differentiation of respondents. Our inquiry appears to lend strong support to his argument.

A second finding relates to the positive relationship between discrimination and the dimensionality of MDS solutions. Broad categorizers, that is, those subjects who tend to be low discriminators, yield MDS configurations

of lower dimensionality. This finding is congruent with the general view that low discrimination corresponds to a form of information processing that favors a broad definition of similarity (Pettigrew, 1982). Broad categorizers show more concern for common features of stimuli rather than for variable features. Therefore, it should not be surprising that their MDS configurations are characterized by lower dimensionality.

Third, our studies strongly indicated that the ability of individuals to process information on a number of dimensions (differentiation) and categories (discrimination) is moderated by their integrative complexity. Those subjects with a high integrative complexity style required a smaller, rather than larger, number of dimensions for representation of their MDS judgments. A study by Pratt, McKay, and Baxendale (1981) casts some interesting light on our own investigations. Using a combination of simulation and laboratory approaches, these authors investigated the validity of an MDS ranking procedure in providing estimates of the conceptual level (meaning integrative complexity) of accounting students. The conceptual level of each participant was assessed by computing the number of MDS dimensions and the weights assigned to each dimension. To obtain an independent measure of integrative complexity, subjects were administered Tuckman's (1966) Interpersonal Topical Inventory test. The (integratively) simple participants showed higher conceptual level (i.e., dimensionality) than the complex participants – a finding that fully supports ours. Moreover, Pratt et al. found that the complex group committed on the average fewer errors (operationalized as the number of intransitivities) than the simple group. This can be due to the relative inability of simple subjects to systematically organize or structure the similarity data, as evidenced by the fact that intransitivity scores and conceptual level (dimensionality) were found to be significantly correlated.

One may thus conclude that MDS as a measure of consumer cognitive complexity is likely to produce counterintuitive results, particularly when there is a need to integrate the data. Warnings against using MDS to measure cognitive complexity are not new. Crockett (1965) is probably the first author to critically address this issue. In a relatively recent publication, Streufert appeared to disassociate himself from his former associates (Schroder et al., 1967). Streufert and Swezey state:

> In its usual form, MDS does not provide estimates of integrative cognitions. Integrative activity, where it generates single higher order concepts, may result in interpretation by the scaling technique, which suggest absence of differentiation. (Streufert & Swezey, 1986, p. 149)

To our knowledge, the present set of investigations is the first comprehensive attempt to address the above issue from an empirical point of view, rather than from a purely theoretical point of view. Hence, the significance of our chapter extends beyond marketing research to encompass the literature on cognitive styles. Our empirical findings should help in resolving the controversy in cognitive style literature surrounding the dimensionality of MDS configurations.

Fourth, our empirical findings provide a first, tentative confirmation of Scott et al.'s (1979) prediction that refined multidimensional judgments are more likely to be obtained by an increase in the number of dimensions used rather than by the proliferation of categories along a single dimension. Consumers with a "high differentiation – low discrimination" profile yielded MDS configurations of lower dimensionality as compared to those with a "low differentiation – high discrimination" profile.

Fifth, our investigation also dealt with the impact of several similarity task-related variables on the dimensionality (and stress values) of MDS configurations. Our results were as expected and are consistent with previous studies. They are briefly summarized below:

– Perceived task difficulty is positively related to MDS dimensionality and stress values.
– Reported consistency in making the similarity judgment is negatively related to MDS. dimensionality and stress values.
– Reported confidence is negatively related to MDS dimensionality and stress values.
– Product/brand familiarity is negatively related to MDS dimensionality and stress values.
– Product importance is negatively related to MDS dimensionality and stress values.

Finally, our results also have implications for future research on consumer information-processing "strategies." As noted by several researchers (e.g., Viswanathan, 1993; Capon & Burke, 1980; Childers et al., 1985), one should draw a clear distinction between information-processing skills and information-processing preferences. Although information-processing skills are based on individual's cognitive and noncognitive abilities, information-processing preferences correspond to the individual's predisposition to use one particular information-processing strategy out of the battery of strategies available to him/her. The use of a particular strategy need not correspond to a conscious choice (Alba & Marmorstein, 1987; Cohen & Basu, 1987; Novak & Hoffman, 2009; Lynch & Srull, 1982). It should be

viewed as the individual's preferred response to a particular situation. This response is constrained by the perceived information-processing demands of the task as well as by the individual's awareness of his/her own limitations in information-processing abilities as captured by cognitive complexity (Ford, Schmitt, Schechtman, Hults, & Doherty, 1989; Capon & Davis, 1984; Punj & Stewart, 1983).

Limitations and Future Research

Some limitations of the present studies are worth stressing. Most of the correlations found were generally low but very similar to those typically obtained in other individual differences (e.g., personality) research (Punj & Stewart, 1983). There are reasons for these low correlations. As indicated earlier in this chapter, individual differences in cognitive complexity are but one factor influencing dimensionality of multidimensional judgments. The other factors are the ecological or inherent complexity present in the data, the familiarity developed by subjects with the particular stimulus domain under consideration, and the affective and cognitive importance of the stimuli for the subjects. Cognitive complexity alone cannot thus be expected to provide full explanation for any observed variation in dimensionality.

Individual differences in dimensionality are more likely to be found and attributable to differences in level of cognitive complexity where the judgmental task is very involving and when the ecological complexity of the data exceeds the information-processing skills of the less complex subjects (Kozhevnikov, 2007; Streufert & Streufert, 1978; Streufert & Swezey, 1986). When these conditions are not met, moderate or no correlation should be found between dimensionality and cognitive complexity. For example, Streufert and Swezey (1986, p. 28) state that "Differences between complex and less complex individuals can, however, be decreased or eliminated by a number of environmental conditions or restrictions, for example, stress, information overload, or a set to evaluate." One can thus speculate that the judgmental tasks used in the present investigations were not complex or involving enough to allow cognitive complexity to play a bigger role. Better control of these contextual factors in future studies could lead to more substantially significant results.

Future research should address the issue of differences not only in the number but also in the nature of these dimensions. For example, the

dimensions underlying the MDS configurations produced by integratively complex consumers could be of a higher order (i.e., more integrated) than those corresponding to consumers with a lower integrative complexity profile. Unfortunately, our data do not allow us to empirically examine this proposition. We hope that this study will motivate future researchers to address this issue.

Finally, one should also be aware of a major assumption regarding the cognitive processes underlying MDS consumer judgments. As both distance and content MDS models use a dimensional structure, that is, stimuli are placed within a K-dimensional space, it is generally assumed that MDS judgments are made in a dimensional manner. This assumption has been challenged by a number of researchers. It is well-documented evidence that subjects do not always use dimensions to form their judgments (e.g., Kimchi, 1992; Mishra & Nayakankuppam, 2006; Barsalou, 1983; MacInnis & Price, 1987; Mervis & Rosch, 1981; Olshavsky & Granbois, 1979; Gati & Tversky, 1984; Pruzansky, Tversky, & Carrol, 1982; Tversky & Gati, 1982; Rook, 1987). Rather they may process data in a more global fashion than is assumed by dimensional MDS models. For example, Lockhead (1972) suggests that stimuli are first processed holistically and then, if deemed necessary, further processing occurs.

A study by Johnson and Fornell (1987) indeed suggests that a feature-based additive tree procedure (ADDTREE) should be preferred over a dimensional procedure such as MDS when consumers use product features rather than dimensions to form their judgment. The issue of whether MDS stimuli are processed holistically, in a dimensional manner, or via some other form of processing calls for systematic research.

SUMMARY

To summarize, we agree that MDS is a useful and convenient procedure for obtaining a spatial representation of stimuli in a multidimensional space and capturing consumers' overall perceptions of the stimuli. Our results indicate, however, that it may not be appropriate to view the spatial representations obtained by MDS as an accurate reflection of either consumers' cognitive structural characteristics (e.g., cognitive complexity) or the cognitive process leading to the formation of product judgments, particularly when these stimuli are complex and involve higher order integrative aspects.

NOTES

1. The present investigation does not examine preference-based MDS solutions. For an attempt to understand the relationship of abstraction levels to preference data, the reader is referred to the so-called "Means-End Chain Model" (Gutman, 1982; Reynolds, 1985; Reynolds, Gutman, & Fiedler, 1984; Reynolds & Perkins, 1987).

2. The question of the relationship between cognitive styles, most often cognitive complexity, and intelligence or other mental abilities has been frequently raised (e.g., Kogan, 1971; Messick, 1976; Wardell & Royce, 1978). Based on their extensive review of the literature, Goldstein and Blackman (1978) conclude that "cognitive complexity seems to be independent of intelligence" (p. 220). Streufert and Streufert (1978, p. 125) note lack of correlation between intelligence and cognitive complexity for persons of normal or high intelligence. Finally, Guilford (1980) suggests that his well-known "structure-of-intellect model" could serve as a frame of reference for future research on cognitive styles. His conclusion, however, is unequivocal "… it is unlikely that cognitive styles are merely abilities … for many of them appear to represent directions of preferences in information processing" (p. 737).

3. The concept of cognitive differentiation – as it is used here – should not be confused with the work by Witkin and associates (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962) under the term "psychological differentiation." Witkin's use of differentiation refers to individual differences in visual-motor tasks and is generally considered to be irrelevant to the study of "cognitions involving verbal concepts, dimensions, etc." (Streufert & Streufert, 1978, p. 14).

4. In this test, subjects are asked to indicate the names of eight products (or brands) matching eight product descriptions assumed to be representative of a variety of product judgment contexts. Any product (or brand) can be selected, but none can be used more than once. After naming the eight products of their choice, subjects are asked to rate each product along eight characteristics using a six-point scale. The order of presentation of characteristics and of the particular product to be rated is fully rotated. The individual product differentiation scores are derived through a procedure similar to the one used in Bieri's Rep test (Bieri et al., 1966).

5. These 15 brands were extracted from a larger set of brands used in a related study. Regression analysis showed that there was no significant effect of such embedding.

6. Given the input pattern of say five empirically obtained stress values in dimensions one to five, MSPACE attempts to find the best fitting match to the Monte Carlo data in one, two, three, and four dimensions. A least square loss function is employed, and the minimum, for each generated dimensionality, is found by a simple direct search. The best fitting dimensionality, denoted by NDIM, is taken to be that which yields the lowest residual sum of squares, over one, two, three, and four dimensions.

7. These subjects were part of a much broader investigation of the construct validity of a wide variety of cognitive tests.

8. In this test, subjects are presented with four different sets of nonsense figures. For each set, a new category is created by defining a cue figure by a nonsense name (e.g., an anap), and the subject is asked to indicate how many of the figures that follow are equivalent enough to be placed in that category. The figures that follow vary along a number of dimensions (size, features, spatial orientation, etc.) from being extremely similar to the cue figure to being extremely dissimilar. Thus, if one's category width is narrow, few figures should be included, whereas if one's equivalence range is broad, many figures should be chosen.

9. In the impression formation test, the individual is presented with a set of three adjectives and is asked to write down impressions of a person described by the adjectives. He is then presented with another set of three adjectives inconsistent with those used in the first set, and again asked to write his impressions of a person described by this set of adjectives. Finally, the subject is told that both sets of adjectives actually refer to the same person and that he is to write his impressions of this person. The descriptions are used as the basis of assessing the individual's level of integrative complexity.

10. The authors would like to acknowledge the valuable assistance of Dr. Susan Streufert for scoring the Impression Formation Test and Dr. A.N. Press for scoring the Role Category Test. The computer program KOGNI kindly made available to us by Drs. Joachim Funke and Walter Hussy, Universitat Trier, West Germany, was used to score the object sorting test.

11. We are here drawing from Alba and Hutchinson (1987). Readers who desire greater detail as well as an extensive list of references are referred to their article. Discussion of this literature is beyond the scope of this chapter.

12. One should not, however, jump to the hasty conclusion that increasing familiarity will automatically lead to better integrated structures. An exploratory study by Conover (1982) suggests that when the task does not encourage the use of organization and integration processes, familiarity may result in higher dimensionality rather than lower dimensionality. This is consistent with the commonly held belief (e.g., Brucks, 1985; Mikaye & Norman, 1979) that differences between knowledgeable and less knowledgeable people will not be found unless the complexity of situational context justifies it.

13. As an alternative to MDS, some authors (e.g., Hirschman, 1981) have used factor analysis for determining the number of dimensions "used" by subjects in perceiving products. Most of the limitations discussed for MDS also apply to factor analysis. In addition, the factor analysis approach usually requires that the researcher first identify the salient product attributes used by subjects, a requirement that is not necessary in MDS.

14. For example, in their investigation of the cognitive structure underlying person perception, Kehoe and Reynolds (1977) found that an interactive MDS program (INTERSCAL) yields interperson distances that are predictive of Kelly's Rep Test triad judgments, that is, the stimulus persons close together in the INTERSCAL structure are the two judged as similar in the REP Test triad. This finding cannot be interpreted as indicating a positive relationship between the number of dimensions extracted by the INTERSCAL procedure and the cognitive differentiation of subjects.

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APPENDIX A

Sl. No.	Authors (Year)	Relevant Summary	Specific Methodological, Theoretical, or Managerial Benefits of Advancement
		Technical refinements and advancements in multidimensional scaling	
1	Steenkamp et al. (1994)	The authors describe an advancement in MDS technique, which relaxes the restrictive assumptions of traditional compositional mapping techniques that all the attributes used in the study are also equally relevant to all the stimuli. The authors' new free-response technique allows consumers to describe the brands in their own terminology. The perceptual map presented by this new technique is interpretable on the basis of the idiosyncratic attributes of the subjects. The technique also has a limitation in that the data have to be content analyzed, which is costly and time-consuming. Dimensions, generated using this technique, are also more difficult to interpret.	Consumers can rate brands using their own terminology. All the attributes used by respondents need not be equally relevant.
2	Derbaix and Sjöberg (1994)	The authors study differences between preference and similarity judgments in terms of stability, confidence, number of dimensions, and location of the stimuli on the map. The authors find that preference judgments are more stable than similarity	The chapter highlights idiosyncrasies that can lead to differences in the MDS solution when preference versus similarity judgments are used.

		judgments. Further, spatial representations are different in terms of dimensions for similarity-judgment-based MDS as compared to preference-based MDS, especially for stimuli that are very much liked by subjects.	
3	Bijmolt and Wedel (1995)	The authors argue that the data collection method used for MDS affects respondent fatigue, boredom, completion time, missing values, and the perceptual map. The authors propose that methods of sorting, paired comparisons, conditional ranking, and triadic combinations extract lead to solutions that extract a higher number of dimensions. In contrast, conditional ranking and triadic combinations require more completion time, and hence cause a larger increase in fatigue and thereby higher levels of error.	The advantages and disadvantages of different data collection methods for MDS are highlighted.
4	Mackay, Easley, and Zinnes (1995)	The authors propose a probabilistic unfolding model that can overcome the indeterminacy of preference-based single-ideal point models. Further, they suggest that their model can be reformulated to a joint model that can work with dissimilarity data and preference judgments combined. The authors argue that their model, unlike a deterministic model, can recover the parameters of the products and the ideal point.	Preference data can be used to prepare single-ideal point-based perceptual maps.

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Sl. No.	Authors (Year)	Relevant Summary	Specific Methodological, Theoretical, or Managerial Benefits of Advancement
5	Desarbo, Young, and Rangaswamy (1997)	Multidimensional unfolding can often lead to degeneracy where the brands and consumers are shown in concentric circles in the perceptual map. The new unfolding method presented by the authors can use incomplete nonmetric preference data and includes diagnostic indices of solution degeneracy. The authors argue that their method avoids running into degeneracy issues and it can also use incomplete (or censored) rank input data. An important underlying assumption made by the authors in determining their likelihood function is that the conditional density of their latent distance measure has the "proportional hazards" property.	Method provides diagnostic indices of degeneracy of the MDS solution. This method can also be used on censored rank-order data.
6	Carroll and Green (1997)	Carroll and Green review and present the algorithmic extensions to MDS such as three-way unfolding models, stochastic models, nonsymmetric matrix models, and MDS and clustering hybrid models, which can be used more so for confirmatory analyses rather than just for exploration. They also present new developments in scanner data applications in MDS.	The review highlights methodological advances in MDS and related techniques

| 7 | Sinha and Desarbo (1998) | Sinha and Desarbo propose a MDS method that simultaneously estimates locations of brand in the perceptual map in terms of value perceptions and the segmentation of consumers in a joint-dimensional space. This method is based on a latent structure ordered probit analysis. In this model, the compositions of the dimensions are obtained by correlating the brand location matrix with the attribute matrix, which was prepared from information found in consumer reports. The authors argue that this technique improves on existing MDS techniques of illustrating perceived customer value because it enables researchers to infer the underlying dimensions of perceived value from the data without specifying these a priori, as is common in existing methods. | The analysis is based on the overall perceived value that the respondent perceives in each of the stimuli. |
| 8 | Kim et al. (1999) | The authors present an advancement in choice data-based MDS technique that accommodates a variety of contextual effects. This technique splits the determinants of choice into context-free and context-dependent components. This method incorporates a context-dependent component that captures the direction and magnitude of the impact of context effects on the probability of brand choice. Further, this methodology has the ability to recover the true configuration of brand locations and ideal points in the presence of context effects. | This model can help researchers in recovering the true brand locations and ideal points in the presence of context effects. |

APPENDIX A (*Continued*)

Sl. No.	Authors (Year)	Relevant Summary	Specific Methodological, Theoretical, or Managerial Benefits of Advancement
9	Malhotra, Peterson, and Kleiser (1999)	This chapter provides observations on the state of the art in marketing research during 1987–1997. In this review, the authors highlight the aspect of psychometric scaling that the solution is very sensitive to the domain and the type of stimuli.	The review highlights methodological advances in MDS and related techniques.
10	Andrews and Manrai (1999)	The authors argue that consumers are more likely to form preferences for attributes of products rather than for each individual product. Hence, the authors map the locations and preference for attributes. The authors' model is a combination of latent-class preference model (with dimensional restrictions) and latent-class MDS. Attribute levels close to each other are equally preferred by consumers. The authors' MDS model enables managers to view interactions between the attributes, and is also more parsimonious than an unrestricted latent-class model-based MDS.	This model provides unique managerial insights as it enables the researcher to visually examine the effects of price reductions and promotions on the locations of attribute levels of stimuli.

11	Bijmolt and Wedel (1999)	The authors conduct Monte Carlo Simulation to compare the maximum likelihood (ML) methods used in MDS (specifically, MULTISCALE, MAXSCAL, and PROSCAL, and KYST) in terms of recovery of the true dimensionality and the recovery of the true distances, given the true number of dimensions. The chapter also looks into whether it makes a difference (in terms of recovering true dimensionality) when dissimilarity measure is continuous versus ordinal.	This method can provide specific guidance to researchers on which ML method and dissimilarity measure to choose for their MDS.
12	Desarbo and Wu (2001)	The authors propose a new latent structure MDS method that can jointly represent the common structure in preferences, attribute information, and dissimilarities in the same spatial map, and at the same time accommodate for heterogeneity. The authors specify separate stimuli dissimilarity and preference models and combine them by assuming independence between the error terms of the two models.	Manager can visualize preference structure, attribute, and brand dissimilarity in a single spatial map, for each respondent segment.

APPENDIX A (*Continued*)

Sl. No.	Authors (Year)	Relevant Summary	Specific Methodological, Theoretical, or Managerial Benefits of Advancement
13	Desarbo, Kim, Choi, and Spaulding (2002)	In unfolding MDS procedures, the utility of a stimulus brand for a consumer is inversely related to the distance between the con-sumer's ideal point and location at which the brand is positioned in the perceptual space. The authors argue that the MDS models, in extant literature, do not give relevance to the brand-stimuli's market share and attraction it has, while deriving the consumer's utility. The authors present an MDS scheme, which overcomes this problem. This model incorporates the effects of brand's attraction based on its market size and the consumer's purchase pattern and volume and can be used with both choice and metric data.	This model takes into consideration the influence of brand size and of individual buying power in the attraction of a consumer to a brand.
14	Lee et al. (2002)	The authors propose a stochastic multiple ideal point model to capture multiple ideal pro-ducts from an analysis of choice data over time periods. The basic premise behind is that households possess a set of ideal pro-ducts, each representing a distinct utility. By using MDS, the authors estimate spatially the number of ideal points per household,	The concept and premise of multiple ideal points have been a major contribution to the files of consumer research and MDS.

their locations, brand coordinate locations, and the probabilities with which the ideal points are activated.

| 15 | Natter, Mild, Wagner, and Taudes (2007) | The authors argue that the segmentation–targeting–positioning (STP) approach of product positioning analysis is itself a segment-specific concept. So, understanding customer segmentation is of high relevance so as to appropriately target the product. Hence, the authors apply MDS (using the iterative majorization method) and K-means clustering to the same proximity data, such that results from the MDS are used as further input for K-means clustering. | This model enables managers to visualize target markets, customer preferences, competitors' strengths, and customer segments on a single map. |
| 16 | Desarbo et al. (2008) | The authors propose a new clusterwise multiple ideal point spatial methodology that estimates multiple ideal points at the market segment level while simultaneously determining the market segments' composition of consumers as well as the corresponding joint space. The authors also argue that contextual effects can impact the MDS solution. The authors present their method and then show that their overlapping clusterwise solution with multiple ideal points dominates other simpler clusterwise solution that do not assume overlap among clusters. | It is possible for managers to conceptualize overlapping MDS solution with multiple ideal points. |

APPENDIX A (*Continued*)

Sl. No.	Authors (Year)	Relevant Summary	Specific Methodological, Theoretical, or Managerial Benefits of Advancement
17	Desarbo et al. (2008)	The authors' MDS vector-model solution performs segmentation and positioning simultaneously on a purchase likelihood-based preference data. But, unlike latent-class MDS techniques, the authors' technique does not need any distributional assumptions. Further, the estimation method used for this technique is identified much faster than the latent-class MDS models. Also, this MDS method can accommodate overlapping segments as well. This technique calculates the projection of a brand on the segment vector, for each segment. Finally, this technique allows, as an option, the linear reparameterization of the brand coordinates (X) as functions of designated attributes, thus enabling mapping of attributes on the perceptual map. The authors use a four-step alternating least squares algorithm, which is relatively fast, but identification of the model is not assured.	This method does not need to assume any particular distributions. Further, it also accommodates either partitions or overlapping segments.

Applications of multidimensional scaling (relevant summary)

1	Richins (1994a, 1994b)	Richins studies consumer's public and private meanings of their possessions. She uses multidimensional scaling to perceptually identify three dimensions in public meanings of possession. She then identifies the associations between these dimensions and private meanings, which she identifies from a content analysis exercise undertaken by participants. Her findings suggest that the prestige dimension is present only in public meanings of possessions but not in the private meaning of possessions.
2	Richins (1994a, 1994b)	Richins' studies reveal materialism characteristics of their owners, based on their possessions. She conducts an MDS on people's possessions and identifies the following four dimensions: instrumental/symbolic possession, prestige/ordinary possession, recreational/necessity possession, and achieved/received possession.
3	Burroughs and Rindfleisch (2002)	The authors test the hypothesis that materialism is negatively related to collective-oriented values. They arrive at a two-dimensional solution. Their perceptual map reveals that three exemplars of specific collective-oriented values (i.e., religious values, family values, and community values) are located in opposition to materialism, while two

APPENDIX A (*Continued*)

Sl. No.	Authors (Year)	Relevant Summary	Specific Methodological, Theoretical, or Managerial Benefits of Advancement
		indicants of noncollective-oriented values (i.e., work values and variety seeking) are each located almost orthogonally away from materialism, thus supporting their hypothesis.	
4	Viswanathan, Kuruzovich, Gosain, and Agarwal (2007)	The authors research online buying services (OBSs) such as Autobytel, LendingTree as a part of the value chain in their respective domains. The authors then conduct an MDS analysis to plot each of the OBSs in their study. Their perceptual map has three dimensions and it indicates that there are three distinct groups of OBS. The authors then also conduct a cluster analysis of the OBSs and, given the results of their MDS map, specify a three-cluster solution.	

APPENDIX B

Sl. No.	Authors (Year)	Relevant Summary	How Does Variable(s) Identified in the Study Potentially Moderate Our Main Effect Hypotheses?
1	Weitz and Jap (1995)	The authors argue that resolution of conflict can be facilitated if the parties understand each other's motivational structure. Further, they argue that an understanding can also be developed between dyadic partners by both direct talk and indirect exchanges. Further, they argue that conflict resolution is more likely if both the partners possess high cognitive complexity.	Not apparent.
2	Mikulincer (1995)	The author focuses on studying the association between the attachment style of participants and their mental schema about themselves. Secure people emphasize the importance of a warm attachment relationship and such people described themselves in positive terms. Further, secure participants exhibited a highly differentiated and integrated self-schema based on the number and distinctiveness of the self-aspect categories that participants had created for their individual distinctive traits, in comparison to anxious-ambivalent participants.	The level of security a person experiences in his/her persona can potentially moderate our hypotheses.

APPENDIX B (*Continued*)

Sl. No.	Authors (Year)	Relevant Summary	How Does Variable(s) Identified in the Study Potentially Moderate Our Main Effect Hypotheses?
3	Gruenfeld (1995)	The author argues that the individual's status in groups that they belong to can moderate the prior finding that conservatives tend to interpret policy issues in less complex ways than do liberals and moderates. The author finds that minority opinions, and those written on behalf of unanimous decisions, are likely to be less complex than majority ones, regardless of the ideology.	An individual's political philosophy may likely moderate our hypotheses.
4	Mitchell and Dacin (1996)	Given that prior literature has shown that individuals with more domain knowledge exhibit greater cognitive differentiation than those with less domain knowledge, the authors argue that cognitive differentiation (i.e., the number of attributes) and the number of attribute levels used to differentiate between objects in the product category (i.e., cognitive differentiation) will increase with expertise.	We have identified the main effect of familiarity on the number of dimensions, etc., in H14 and H15. But, if overall expertise is seen as distinct from familiarity (Alba & Hutchinson, 1987), then expertise may potentially moderate our hypotheses.
5	Pennell (1996)	The author's short commentary highlights the need for researchers to understand that participants' use of classification schemes is very much context dependent and subjective aspects dependent. Doing so should provide additional insights to researchers into psychological phenomena.	The context and subjective relevance of dependent variables can potentially moderate our hypotheses.

6	Carraher and Buckley (1996)	The authors argue that cognitive complexity accounts for differences in the number of perceived dimensions with which individuals conceptualize pay satisfaction. This finding is relevant to industrial/organizational psychology researchers, as they need to recognize the mean levels of cognitive complexity within their samples so that they do not break pay satisfaction into subcategories, although, theoretically meaningful to their participants.	If the stimuli are related to pay satisfaction, then that specific context can moderate our hypotheses.
7	Bless et al. (1996)	The authors find that sad people are more likely to undertake a concrete style of processing and hence rely on the specifics in their knowledge schema more so than do happy people, who tend to undertake an abstract style and hence process information more globally.	The level of sadness/happiness that people are experiencing can moderate our hypotheses.
8	Davies (1998)	The author finds that highly dogmatic individuals process information in a way that relatively ignores inconsistencies in beliefs. In contrast, people, who are less dogmatic, are able to make connections between disparate beliefs and disbeliefs. Dogmatic people also have relatively higher confidence even when their interpretation is based on differential reason generation (e.g., more supporting than contradictory evidence recalled for an event being construed as the higher likelihood of that event). The author argues that dogmatism is associated with greater output interference in reason generation.	The level of dogmatism of respondents may moderate our hypotheses.

APPENDIX B (*Continued*)

Sl. No.	Authors (Year)	Relevant Summary	How Does Variable(s) Identified in the Study Potentially Moderate Our Main Effect Hypotheses?
9	Evans, Kleine, Landry, and Crosby (2000)	The authors argue that personal selling in a single encounter is an ill-structured problem, one for which several potential solutions might exist. Hence, there is no reason to believe that high cognitive complexity salespeople are more likely to be successful in a single encounter. Rather, a salesperson's first impression of a prospect is likely more related to their sales effectiveness in a single encounter.	Not relevant.
10	Ji, Peng, and Nisbett (2000)	The authors find that East Asians pay more attention to details and hence are more confident in detecting covariations in their environment as compared to Americans. But, the authors report that these differences across the cultures faded when participants in both these cultures were granted illusory control over varying the level of covariation.	Respondents' ethnicity (Asian vs. American) may moderate our hypotheses.
11	Kuhnen, Hannover, and Schubert (2001)	The authors argue that if an individual's independent self-construal is primed, then she/he is less influenced by visual field and hence less impacted by the context. The underlying explanation is that such participants perceive	Respondents' self-construal (independent vs. interdependent) may moderate our hypotheses.

12	Morrin et al. (2002)	themselves as highly differentiated from their context. In contrast, participants, who were primed to be interdependent, were more likely to be impacted by the influence of the context. The authors study the behavior of stock market investors. They conduct a cluster analysis and find three clusters, namely, momentum, inertia, and contrarian investors. The momentum and contrarian investors display differences in their responses to price changes of stocks, demographic characteristics, and, importantly, in cognitive-processing styles. The contrarian investors elaborate more than do momentum investors, thus leading to the likely differences in their cognitive-processing styles.	Whether the respondent is a momentum or a contrarian investor may likely moderate our hypotheses.
13	Keltner et al. (2003)	The authors argue that a deliberate (local) processing style is linked to more interpersonal sensitivity and that heuristic (global) processing is associated with stereotyping (which is seen as the opposite of interpersonal sensitivity). Further, the authors find that high-power people approach tasks using a global processing style and that low-power people approach tasks using a local processing style.	The level of power that a person construes himself/herself to possess may moderate our hypotheses.
14	Van Baaren, Horgan, Chartrand, and Dijkmans (2004)	The authors study the relationship between context dependence and behavioral mimicry (impersonation and imitation). When participants' context dependence was induced, participants showed more mimicry as compared when context independence was induced.	Not apparent.

APPENDIX B (*Continued*)

Sl. No.	Authors (Year)	Relevant Summary	How Does Variable(s) Identified in the Study Potentially Moderate Our Main Effect Hypotheses?
15	Smith and Trope (2006)	Elevated power increases the psychological distance one feels from others, and this distance, according to construal level theory. Hence, the authors argue that high-power people reason in a relatively less cognitively complex ways and are more prone to stereotype others than are low-power people.	Similar to that of Keltner, Gruenfeld, and Anderson (2003) – the level of power that a person construes himself/herself to possess may moderate our hypotheses.
16	Amir and Levav (2008)	The authors argue that when people learn preferences in context, they learn a context-specific choice heuristic, leading to less consistent preferences across contexts. In contrast, repeated choices from sets containing only two options impel people to make more consistent preferences. The number of options in a competitive context (three vs. two) changes how individuals assign subjective weights to different attributes.	The number of options presented to respondents may moderate our hypotheses.

17	Smith, Wigboldus, and Dijksterhuis (2008)	Powerless individuals have difficulty inhibiting information in complex tasks. When respondents were made to use a global processing style, they reported feeling more powerful than participants who used a local processing style.	Not apparent.
18	Louviere, Islam, Wasi, Street, and Burgess (2008)	The authors find that if the number of attribute level differences for different numbers of attributes in a systematic way is increased, participants are less consistent in answering choice. These findings are likely related to the differences in cognitive styles that differences in attribute levels can cause.	Responders, who have been working on a complicated product that have several attributes, may provide inconsistent responses.
19	Hauser, Urban, Liberali, and Braun (2009)	The authors find that web sites are more preferred and increase sales if their characteristics match customers' cognitive styles. For instance, if a web site provides more detailed date to customers who are more analytic, the customers tend to increase their purchase intentions.	How information presented to respondents might moderate our hypotheses.

STRUCTURAL MODELING OF HETEROGENEOUS DATA WITH PARTIAL LEAST SQUARES

Edward E. Rigdon, Christian M. Ringle and Marko Sarstedt

ABSTRACT

Alongside structural equation modeling (SEM), the complementary technique of partial least squares (PLS) path modeling helps researchers understand relations among sets of observed variables. Like SEM, PLS began with an assumption of homogeneity – one population and one model – but has developed techniques for modeling data from heterogeneous populations, consistent with a marketing emphasis on segmentation. Heterogeneity can be expressed through interactions and nonlinear terms. Additionally, researchers can use multiple group analysis and latent class methods. This chapter reviews these techniques for modeling heterogeneous data in PLS, and illustrates key developments in finite mixture modeling in PLS using the SmartPLS 2.0 package.

1. INTRODUCTION

Structural modeling techniques such as structural equation modeling (SEM) or partial least squares (PLS) path modeling incline researchers to a high

level of abstraction, focusing on latent variables or linear composites, rather than on the observations themselves. Yet data concerns, such as the presence of outliers (Bollen & Arminger, 1991), are still important issues for structural modeling, as much as they are for regression and other techniques. Applications of structural equation models are usually based on the assumption that the analyzed data stem from a single population, so that a unique global model represents all the observations well. However, in many real-world applications, this assumption of homogeneity is unrealistic. Heterogeneous perceptions and evaluations of products and services form the basis of the concept of market segmentation. Researchers long ago noted the importance of considering heterogeneity in SEM (e.g., Capecchi, 1973). Including interactions and nonlinear terms in a model is one way to allow for heterogeneity across respondents. These higher order terms mathematically imply that simple slopes – the derivative of the dependent variable with respect to a given predictor – vary by respondent, depending on the respondent's score on another predictor (Cohen, Cohen, West, & Aiken, 2003). Traditionally, however, heterogeneity implies the existence of distinct groups of respondents. These groups may be defined a priori on the basis of, for instance, geographic variables or stated preferences, but heterogeneity is frequently unobservable and its true sources are unknown to the researcher (Wedel & Kamakura, 2000). Based on the seminal work by Blåfield (1980), finite mixture models treat group identity as a latent variable to be discovered from the data. Covariance-based SEM has long included multiple group analysis (Jöreskog, 1970) to handle a priori groups. SEM also includes hierarchical or multilevel models for clustered data (Stapleton, 2006; Wetzels, Odekerken-Schöder, & van Oppen, 2009). Likewise, finite mixture modeling has been applied to SEM (Arminger & Stein, 1997; Jedidi, Jagpal, & DeSarbo, 1997a; Yung, 1997; Dolan & van der Maas, 1998; Arminger, Stein, & Wittenberg, 1999; Lee & Song, 2002). SEM researchers have also fused multilevel modeling and mixture modeling into hybrid multilevel growth mixture modeling procedures (e.g., Muthén, 2002, 2008).

   Likewise, the PLS approach to structural modeling has come to include approaches for dealing with heterogeneity (Henseler, Ringle, & Sinkovics, 2009). Originally developed by Wold (1974, 1982) and further extended by Lohmöller (1989), PLS path modeling represents an alternative to covariance-based SEM. PLS avoids most distributional assumptions, explicitly fortifies exploration of alternative models, and works dependably even at relatively low sample sizes (Cassel, Hackl, & Westlund, 1999; Reinartz, Haenlein, & Henseler, 2009) and formative measurement models (Ringle, Götz, Wetzels, & Wilson, 2009). PLS path modeling has lately

established itself as a tool for researchers, especially in the management information systems (MIS) and marketing disciplines. The use of PLS path modeling in MIS mainly draws on Davis' (1989) technology acceptance model (e.g., Agarwal & Karahanna, 2000; Gefen & Straub, 1997; Igbaria, Zinatelli, Cragg, & Cavaye, 1997). In marketing, the various customer satisfaction index models, such as the American Customer Satisfaction Index (ACSI; Fornell, Johnson, Anderson, Cha, & Bryant, 1996), represent a key area for applying the PLS path modeling methodology.

Tools for dealing with heterogeneous data within PLS path modeling have grown rapidly, with many new developments appearing only in specialized literature devoted to PLS methods. The aim of this chapter is to provide a coherent review of these developments for a broader audience. Furthermore, we illustrate the general problem of structural modeling of heterogeneous data by taking a closer look at finite mixture PLS (FIMIX-PLS; Hahn, Johnson, Herrmann, & Huber, 2002), the most prominent approach for treating unobserved heterogeneity in a PLS framework (Sarstedt, 2008a). The remainder of this chapter proceeds as follows. First, the chapter provides a brief overview of conventional PLS path modeling for a homogeneous population. Then it looks at three distinct approaches for accounting for heterogeneity: single group models with nonlinear and interaction terms, multiple group models with a priori defined groups, and multiple group models with classes inferred based on model results. The chapter offers a detailed empirical example of the latter approach, an application of the FIMIX-PLS method to customer satisfaction and reputation data. It concludes with some general recommendations.

2. PARTIAL LEAST SQUARES PATH MODELING

Following is a brief review of the essentials of PLS path modeling. In applications, the SmartPLS (Ringle, Wende, & Will, 2005b) and PLS-Graph (Soft Modeling, Inc., 1992–2002) software provide easy access to the multivariate analysis technique by intuitive graphical user interfaces. For a more extensive introduction, see, for example, Chin (1998), Haenlein and Kaplan (2004), Henseler et al. (2009), and Hair, Ringle, and Sarstedt (2011).

As in typical SEM analyses, PLS path modeling associates sets of observed variables with other variables, which may be considered latent variables because they are not openly present in the data set. Unlike SEM, however, PLS uses latent variable proxies which are linear composites of the

associated observed variables. These latent variable proxies in PLS can always be expressed as exact linear functions of their indicators.

In general, a PLS path model consists of latent variables and their observed variable indicators. The latent variables may be divided into an $M \times 1$ vector of endogenous constructs η and a $J \times 1$ vector of exogenous constructs ξ, which are linked by the structural equation (Table A.1 provides a description of all of the symbols used in the equations presented in this chapter):

$$\eta = B\eta + \Gamma\xi + \zeta \tag{1}$$

Here, ζ is an $M \times 1$ vector of residuals, normally distributed, mutually uncorrelated with ζ_m ($m = 1, ..., J_M$), the residual for construct η_m ($m = 1, ..., M$), uncorrelated with all predictors in the η_m structural equation. This set of equations comprises the "inner model," while measurement equations, linking constructs with observed variables, comprise the "outer model." Every η_m construct is associated with one or more observed variables y_m, and every ξ_j construct is associated with one or more observed variables x_j. The nature of these relationships depends on the "mode" chosen by the researcher. In Mode A, these relationships are expressed as single regressions (Wold, 1982):

$$x_j = w_j\xi_j + \delta_j, \quad \text{for each } x \text{ in the } j \text{ subvector} \tag{2}$$

$$y_m = w_m\eta_m + \delta_m, \text{ for each } y \text{ in the } m \text{ subvector} \tag{3}$$

The roles are reversed in the multiple regression models for Mode B:

$$\xi_j = \sum(w_j x_j) + \delta_j, \text{ for all } x \text{ in the } j \text{ subvector} \tag{4}$$

$$\eta_m = \sum_{m=1}^{M}(w_m y_m) + \delta_m, \text{ for all } y \text{ in the } m \text{ subvector} \tag{5}$$

In both modes, error terms δ are normally distributed with 0 means and are uncorrelated with the predictors in their respective equations. In practice, "reflective measurement" in the PLS literature is synonymous with Mode A, while "formative measurement" is synonymous with Mode B. If different modes are chosen for different latent variables, the literature labels this Mode C. The researcher may choose different modes for different latent variables, but may not mix modes for a given latent variable.

In PLS path modeling, parameter estimation is accomplished through a multistage algorithm. The various stages involve a sequence of regressions in terms of weight vectors, with iteration leading to convergence on a final set

of weights (Henseler, 2010). The weight vectors obtained at convergence satisfy fixed point equations; see Dijkstra (1981, 2010) for a general analysis of such equations and ensuing convergence issues. The basic PLS algorithm, as suggested by Lohmöller (1989), includes three stages which Henseler et al. (2009) summarize as follows:

Stage 1: Iterative estimation of latent variable scores; steps #1.1–1.4 are repeated until convergence is obtained.

Step 1.1: Outer approximation of the latent variable scores. Outer proxies of the latent variables are calculated as linear combinations of their respective indicators. These outer proxies are standardized; for example, they have a mean of zero and a standard deviation of one. For the initial iteration, any arbitrary nontrivial linear combination of indicators can serve as an outer proxy of a latent variable. In practice, equal weights are a typical choice. Later iterations use weights from Step 1.4. These proxies are standardized to 0 means and unit variance.

Step 1.2: Estimation of the inner weights. In the next step, the algorithm constructs a new inner model proxy for each latent variable as a weighted sum of the outer model proxies, constructed in the previous step, for those latent variables which are directly connected to the latent variable in question. There are three schemes available for determining these inner weights. Wold (1982) originally proposed the centroid scheme. Later, Lohmöller (1989) developed the factor weighting and path weighting schemes. The centroid scheme simply uses unit weights adjusted for the sign of the correlation between the two proxies. The factor weighting scheme uses the correlations themselves as the weights. The path weighting scheme pays tribute to the arrow orientations in the path model. The weights of those latent variables that explain the focal latent variable are set to the regression coefficients yielded from a regression of the focal latent variable (regressant) on its latent repressor variables. The weights of those latent variables that are explained by the focal latent variable are determined in a similar manner as in the factor weighting scheme. Regardless of the weighting scheme, a weight of zero is assigned to all nonadjacent latent variables. While these schemes seem very different, practice suggests that the choice makes little difference (Henseler et al., 2009).

Step 1.3: Inner approximation of the latent variable scores. Inner proxies of the latent variables are calculated as linear combinations of the outer proxies of their respective adjacent latent variables, using the

afore-determined inner weights. Again, the proxies are standardized to 0 means and unit variance.

Step 1.4: Estimation of the outer weights. The outer weights are calculated either as the covariances between the inner proxy of each latent variable and its indicators (in Mode A) or as the regression weights resulting from the ordinary least squares regression of the inner proxy of each latent variable on its indicators (in Mode B).

Stage 2: Estimation of outer weights/loadings and path coefficients. These parameters are estimated through the simple regressions as depicted in the outer model equations.

Stage 3: Estimation of location parameters. In this stage, standardization is dropped, and values for the latent variables are estimated again as weighted sums of their indicators. Thus, PLS path modeling estimation always ends with expressing the latent variables as exact weighted sums of their associated indicators, in the metric of those observed variables.

The four steps in Stage 1 are repeated until the change in outer weights between two iterations drops below a predefined limit. The Stage 1 algorithm terminates after Step 1.1, delivering latent variable scores for all latent variables that are used to calculate loadings, outer weights, and inner regression coefficients in Stage 2 via single and multiple (partial) linear regressions. Location parameters are finally computed in Stage 3.

The evaluation of finally computed path modeling results is not straightforward since the nonparametric PLS approach does not provide a global goodness of fit criterion. As a consequence, Chin (1998) has put forward a catalog of criteria to assess PLS path modeling results, for example, by using standard errors that are obtained via bootstrapping. Henseler et al. (2009) describe in depth a systematic application of these criteria in a two-step process that involves (1) the assessment of the outer model and (2) the assessment of the inner model. In the first step, model assessment focuses on the measurement models. A systematic evaluation of PLS estimates reveals the measures' reliability and validity according to certain criteria that are associated with formative and reflective outer models, respectively. Only when this analysis provides evidence of sufficient reliability and validity is it necessary to evaluate the inner path model estimates in the second step. This kind of assessment also includes an evaluation of the predictive power of the model to reproduce the observed data. However, PLS' lack of a global optimization function and consequent

lack of measures of global goodness of model fit definitely limit the use of PLS for theory testing (Hair, Ringle, & Sarstedt, 2011).

3. HETEROGENEITY IN PLS PATH MODELING VIA INTERACTION/NONLINEAR TERMS

After the estimation and evaluation of a PLS path model, complementary PLS analyses may focus on uncovering heterogeneity. As noted previously, one way to express heterogeneity is through the use of interaction or other nonlinear terms. Consider a simple regression model with two predictors, an interaction term and ratio scales (note that this does not hold for interval scales; Carte & Russell, 2003):

$$Y = \beta_0 + \beta_1 X + \beta_2 Z + \beta_3 XZ + \varepsilon \tag{6}$$

The connection to heterogeneity comes by way of the simple slopes implied by the model. The simple slope is found by taking the derivative of Y with respect to each predictor, separately, and thus represents the expected change in Y for a change in one predictor (Cohen et al., 2003). For a linear equation – an equation lacking nonlinear terms – the simple slope is a constant, equal to the regression coefficient. But with an interaction term in the model:

$$\frac{\partial Y}{\partial X} = \beta_1 + \beta_3 Z \tag{7}$$

and

$$\frac{\partial Y}{\partial Z} = \beta_2 + \beta_3 X \tag{8}$$

Thus, inclusion of the interaction term means that the simple slopes now depend on the values of the X and Z variables (PLS moderator analysis; Henseler & Fassott, 2010), so that these slopes can vary for each member of a population. Similarly, for a model with a quadratic term (PLS nonlinear analysis)

$$Y = \beta_0 + \beta_1 X + \beta_2 X^2 + \varepsilon \tag{9}$$

the simple slope becomes:

$$\frac{\partial Y}{\partial X} = \beta_1 + 2\beta_2 X \tag{10}$$

Thus, while each of these models represents one equation with one set of parameter values, the nonlinear terms imply simple slopes that vary across respondents, just as the values of the predictor variables vary across respondents.

Researchers have developed several approaches for the analysis of interaction effects between latent variables (e.g., in PLS moderator analysis; Henseler & Fassott, 2010; Chin, Marcolin, & Newsted, 2003). In situations where a moderator variable is categorical, observations are grouped into subsamples according to the moderator variable's modalities, leading to the multiple group analysis described below. The model may be estimated separately within each subsample, and the parameter estimates compared for significant differences. In the case of metric variables, the standard regression approach is to represent interaction terms by creating products of the main effect variables. The inclusion of the moderator variable's main effect is important to account for mean value changes in the dependent latent variable. Carte and Russell (2003) provide an in-depth discussion of common errors and their solutions in moderator analyses, which are also relevant for PLS path modeling. Moreover, the moderator analysis, complementing PLS path modeling results with additional findings on heterogeneity, may focus on a single indicator at a time for a more concise interpretation of outcomes.

Researchers have proposed a number of PLS-based approaches for modeling interaction and nonlinear terms (Fig. 1 provides an overview). Henseler and Chin (2010) compared approaches for modeling interactions in terms of point estimate accuracy, statistical power, and prediction accuracy. They concluded that the ''orthogonalizing approach'' (Little, Bovaird, & Widaman, 2006) is recommendable under almost all circumstances. This technique, adapted for SEM from regression (Lance, 1988), is designed to deal with the collinearity often found between main effect terms and interaction terms. In a regression interaction model, an indicator for the interaction of predictors X and Z is created by multiplying $X \cdot Z$. As part of this ''product indicator approach,'' the variables X and Z are usually centered (adjusted to have zero means) before multiplication, partly to aid interpretation but also to reduce correlation between main effects terms and interaction term (or between the linear term and the quadratic term, in a quadratic model). Even with this mean centering, however, if the distributions of the main effects are skewed, some correlation will remain (Cohen et al., 2003). The original extension of the product indicator approach to SEM with multiple indicators of each latent variable involved cross-multiplying each indicator of one main effect times each indicator of
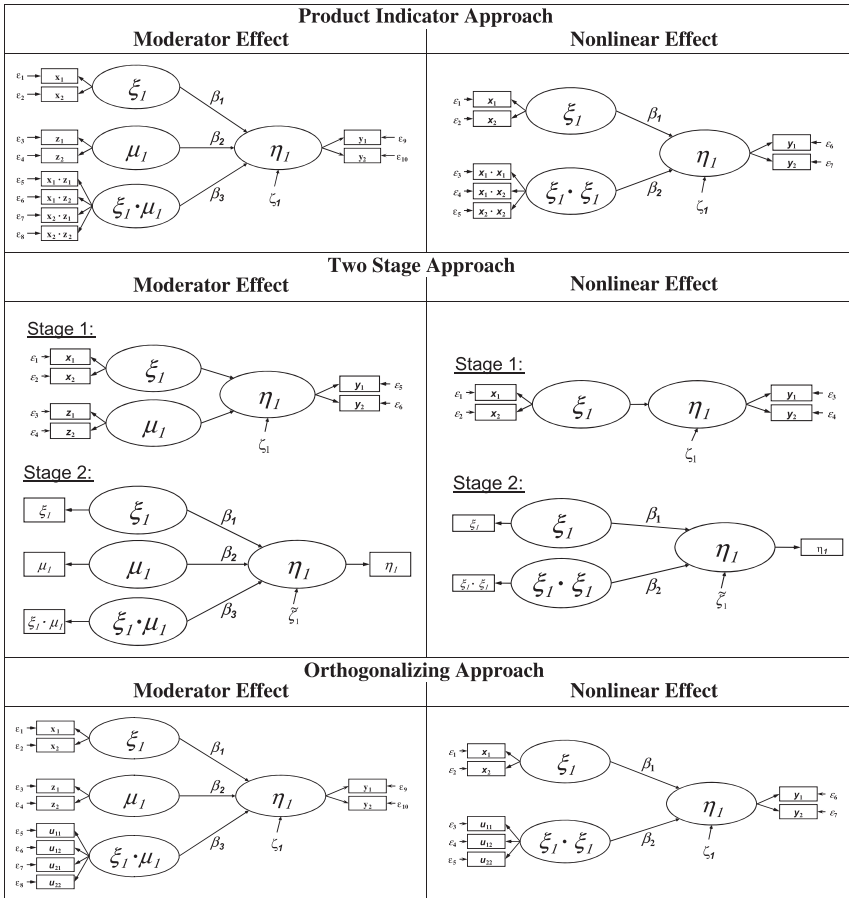
Fig. 1.   Approaches for Modeling Interaction and Nonlinear Terms.

the other main effect, after first centering the indicators to reduce collinearity. As an alternative, the orthogonalizing approach cross-multiplies the indicators without centering. Then each of the resulting products is separately regressed on all of the original main effect indicators, retaining the residual. Once this is done for all of the resulting products, the residuals of these regressions are used as indicators of the interaction term, in analogy to the product indicator approach. Consequently, the interaction variable's indicators do not share any variance with the indicators of the "main effect" exogenous constructs. Fig. 1 illustrates the orthogonalizing approach, where

u_{11}, u_{12}, u_{21}, and u_{22} represent the residuals of the three regressions with the terms $x_1 \cdot z_1$, $x_1 \cdot z_2$, $x_2 \cdot z_1$, and $x_2 \cdot z_2$ as dependent variables. As pointed out by Henseler and Chin (2010), the latent interaction variable is orthogonal to the constituting latent variable because PLS calculates the latent variable scores as linear combinations of the respective indicators.

Additional research has looked for best methods for estimating PLS path models with other types of nonlinear terms (Fig. 1). Simulation studies on the use of the alternative approaches in PLS path modeling (Henseler, Wilson, & Dijkstra, 2007) show that the product indicator approach and the orthogonalizing approach described above should be used when parameter accuracy is a major issue of concern. Thus, these two approaches represent the best choice for hypothesis testing. However, when prediction represents the major or only purpose of an analysis, researchers should use a "two-stage approach." With this approach, researchers first estimate the model with only linear terms and capture the factor scores or case values for the latent variables. Then researchers create a single indicator for the nonlinear term by transforming the linear term factor score, and re-estimate the model including both the linear terms, with their indicators, and the nonlinear term with its single indicator.

Beyond these "purely PLS" approaches, innovations have introduced hybrid techniques that more easily accommodate nonlinear relations. Drawing on techniques familiar in data mining/automated data analysis, Hsu, Chen, and Hsieh (2006) propose an artificial neural network (ANN)-based SEM technique that can measure nonlinear relations by using different activity functions and layers of hidden nodes (Hackle & Westlund, 2000). The ANN-based approach is inspired by the way biological nervous systems process information and, thus, follows a completely different concept than the PLS approach. However, in essence, the approximation procedure is very similar to PLS, except that the ANN-based SEM technique can simultaneously measure inner and outer model relations. Results from simulation and empirical studies show that the ANN-based approach behaves very similarly to PLS path modeling.

Going still further, the NEUSREL package uses a Bayesian neural network (BNN) approach to search for interaction, quadratic and other higher order effects within models that specify only linear effects (Buckler & Hennig-Thurau, 2008). Thus, unlike standard PLS approaches discussed earlier, NEUSREL only requires the researcher to specify the linear part of the model. NEUSREL constructs starting values for its latent variables through principal component analysis, and then optimizes via the BNN approach, with the aim of maximizing variance explained while avoiding

"overfitting" (weighting the equation with additional sample-specific predictive terms). Not surprisingly, the resulting model with nonlinear terms will often outperform a linear-only PLS model in terms of dependent variable variance explained. The estimation process is computationally intensive, unlike true PLS path modeling, which is normally speedy (Wold, 1982). NEUSREL is actually a set of software modules that exploit the capabilities of the MATLAB computational mathematics package, so users must currently have access to MATLAB in order to use NEUSREL. While such approaches as these last two do not constitute conventional PLS path modeling, the general trend of blurring the distinctions between analytical techniques will only accelerate as researchers focus on selecting the best tools to achieve their research mission.

4. MODELING HETEROGENEITY WITH A PRIORI GROUPS

Traditionally, heterogeneity in structural equation models is taken into account by assuming that observations can be assigned to segments a priori, on the basis of observable characteristics such as geographic or demographic traits (Wedel & Kamakura, 2000). In the case of a customer satisfaction analysis, this may be achieved by distinguishing high- and low-income user segments and carrying out multiple group comparisons.

Alternatively, sequential procedures have been proposed in which a researcher can partition the sample into segments by applying a clustering algorithm such as *k*-means on manifest or latent variable scores. However, different clustering algorithms yield different results, and, to date, there is little guidance on choosing the best procedure (Jedidi, Jagpal, & DeSarbo, 1997b). Furthermore, best practice would seem to call for clustering that is based on all available information, hence in relation to the defined model (Squillacciotti, 2010). Empirical studies and numerical experiments show that these "sequential" procedures – exploratory clustering followed by multiple group analysis – are not robust and perform poorly in terms of parameter recovery (Sarstedt & Ringle, 2010). Therefore, if researchers do not have an a priori rationale for distinguishing subgroups within a population, then latent class approaches, which allow for the identification and treatment of unobserved heterogeneity, seem to be a better choice. However, researchers may certainly be interested in differences between subgroups defined a priori, so there is certainly a place for a priori multiple

group analysis in PLS path modeling. This method has long been available in most SEM packages to test hypotheses about differences across populations, in terms of both model structure (i.e., an entirely different model is postulated for each segment) and parameter values (i.e., the model remains the same across all segments, only the parameter values differ). In PLS path modeling, however, multiple group comparison is a rather new research field only experiencing ongoing development since the introduction of the first approach by Keil et al. (2000), who were interested in whether a certain population parameter β differed across two subpopulations ($\beta^{(1)} \neq \beta^{(2)}$) (also compare Chin, 2000).

In this test, the standard PLS algorithm is run first for each subsample, followed by bootstrapping to obtain standard errors of the parameter estimates. The test statistic depends on whether the standard errors of the parameter estimates differ significantly across the subsamples. If the estimates are equal, the test statistic is computed as follows:

$$t = \frac{b^{(1)} - b^{(2)}}{\sqrt{\frac{(n^{(1)}-1)^2}{(n^{(1)}+n^{(2)}-2)} \cdot \text{se}(b^{(1)})^2 + \frac{(n^{(2)}-1)^2}{(n^{(1)}+n^{(2)}-2)} \cdot \text{se}(b^{(2)})^2} \cdot \sqrt{\frac{1}{n^{(1)}} + \frac{1}{n^{(2)}}}} \sim t_{n^{(1)}+n^{(2)}-2} \quad (11)$$

Here, $b^{(1)}$ ($b^{(2)}$) denote the parameter estimates of the path coefficients in subsample one (two), $n^{(1)}$ ($n^{(2)}$) the number of observations in subsample one (two), and $\text{se}(b^{(1)})$ ($\text{se}(b^{(2)})$) the standard error of the path coefficient standard errors as resulting from the bootstrapping procedure. Sarstedt and Wilczynski (2009) describe the complementary approach for paired samples.

In cases where the standard errors are unequal, the test statistic takes the following form (Chin, 2000):

$$t = \frac{b^{(1)} - b^{(2)}}{\sqrt{\frac{n^{(1)}-1}{n^{(1)}}\text{se}(b^{(1)})^2 + \frac{n^{(2)}-1}{n^{(2)}}\text{se}(b^{(2)})^2}} \quad (12)$$

This test statistic is asymptotically t-distributed, and the degrees of freedom (df) are given as follows:

$$\text{df} = \left\| \frac{\left(\frac{(n^{(1)}-1)}{n^{(1)}} \cdot \text{se}(b^{(1)})^2 + \frac{(n^{(2)}-1)}{n^{(2)}} \cdot \text{se}(b^{(2)})^2 \right)}{\left(\frac{(n^{(1)}-1) \cdot \text{se}(b^{(1)})^2}{n^{(1)^2}} + \frac{(n^{(2)}-1) \cdot \text{se}(b^{(2)})^2}{n^{(2)^2}} \right)} - 2 \right\| \quad (13)$$

This approach requires that (1) the two models compared exhibit similar levels of goodness of fit, (2) the data are not too non-normal, and (3) measurement invariance holds (Chin, 2000).

It is obvious that this approach to multiple group comparisons with its inherent distributional assumptions does not fit the largely distribution-free character of the PLS path modeling approach. A more comprehensive approach for model comparison was introduced by Chin (2003) who applies a distribution-free data permutation test. This test seeks to scale the observed difference between a priori formed groups by comparing it to differences between groups that are randomly assembled from the data, without regard to a priori distinctions. In this permutation approach, the researcher first conducts an a priori multiple group analysis and computes the test statistic. Then the researcher generates an empirical distribution of test statistics. This process involves assigning cases randomly to two groups, estimating the model and calculating the test statistic for the parameter estimate difference. A sufficiently high number of iterations (e.g., 1,000) allows generating the test statistic distribution. The significance of the test statistic for the a priori groups is evaluated against this distribution of test statistics. If, for instance, more than 95% of the permutation test statistic exceeds the original statistic, the null hypothesis (the path coefficients are equal) should be rejected at $\alpha = .05$.

Likewise, Henseler (2007) proposed an alternative nonparametric procedure that was specifically designed for multiple group PLS analysis and that exhibits certain advantages in comparison to other approaches (Henseler et al., 2009). In this approach, the subsamples to be compared are exposed to separate bootstrap analyses, and the bootstrap outcomes serve as a basis for the hypothesis tests of group differences. Instead of relying on distributional assumptions, the new approach evaluates the observed distribution of the bootstrap outcomes. Given two subsamples with parameter estimate $b^{(1)}$ and $b^{(2)}$, the conditional probability $p(b^{(1)} > b^{(2)} | \beta^{(1)} \leq \beta^{(2)})$ has to be determined. Here, $\beta^{(1)}$ and $\beta^{(2)}$ represent the true population parameters of population one and two. A researcher would like to be sure that the probability of error is below a specified α-level before concluding that $\beta^{(1)}$ is larger than $\beta^{(2)}$. Using the parameter estimates of two subsamples from bootstrapping, the researcher can easily verify how probable a difference in parameters between two subpopulations is, and hence test their hypothesis with the following equation:

$$p(b^{(1)} > b^{(2)} | \beta^{(1)} \leq \beta^{(2)}) = 1 - \sum_g \frac{\Theta\left((b_g^{(1)} + b^{(1)} - \bar{b}^{(1)}) - (b_g^{(2)} + b^{(2)} - \bar{b}^{(2)})\right)}{G^2}$$

(14)

In the above equation, G denotes the number of bootstrap samples, $b_g^{(1)}$ and $b_g^{(2)}$ the bootstrap parameter estimates per bootstrap sample, $\bar{b}^{(1)}$ and

$\bar{b}^{(2)}$ denote the means of the focal parameters over the bootstrap samples, and Θ stands for the unit step function, which has a value of one if its argument exceeds zero, otherwise zero. The superscript in parentheses marks the respective group. This equation states that G^2 (i.e., all possible) comparisons of bootstrap parameters have to be made.

This approach to PLS multiple group analysis does not require any distributional assumptions and is simple to apply by using the bootstrap outputs that are generated by the prevailing PLS implementations such as SmartPLS (Ringle et al., 2005b) and PLS-Graph (Soft Modeling, Inc., 1992–2002). Researchers can easily conduct the final calculations with available spreadsheet software applications.

As indicated above, one fundamental requirement for carrying out multiple group comparisons concerns the establishment of measurement invariance (Steenkamp & Baumgartner, 1998). According to Vandenberg & Lance (2000, p. 4), this step "is a logical prerequisite to conducting substantive cross-group comparisons (e.g., tests of group mean differences, invariance of structural parameter estimates), but measurement invariance is rarely tested." Even though group comparisons require invariance of the elements of the measurement structure (i.e., factor loadings and measurement errors) and of response biases, researchers consciously or unconsciously assume that the structures of the measures that they compare across the groups are equal (Steinmetz, Schmidt, Tina-Booh, Wieczorek, & Schwartz, 2009). However, the validity of this assumption is critical for any conclusions about group-related differences. Little (1997) even states that one cannot claim that the construct is the same in the different groups unless the assumption of measurement invariance is confirmed. Tests for measurement invariance address four questions (Steinmetz et al., 2009, p. 600): "Are the measurement parameters (factor loadings, measurement errors, etc.) the same across groups? Are there pronounced response biases in a particular group? Can one unambiguously interpret observed mean differences as latent mean differences? Is the same construct measured in all groups?"

Testing for measurement invariance has been broadly discussed in SEM literature – Vandenberg and Lance (2000) provide a review. Even though measurement invariance should be added to the well-established criteria of reliability, homogeneity, and validity when performing multiple group analysis, literature on PLS does not provide any suggestions to address this issue. An appropriate means of testing measurement model invariance in PLS path modeling addresses the four questions raised by Steinmetz et al. (2009) by using bootstrapping or permutation tests-based PLS multiple

group analysis results (Keil et al., 2000; Chin & Dibbern, 2010). See Ringle, Sarstedt, and Zimmermann (2011) for an application.

Then again, an insistence on measurement invariance across groups carries its own assumption that the impact of group membership is limited to the structural parameters of the inner model. In many cases, this assumption is questionable or even implausible, and researchers should consider group membership effects on both structural and measurement parameters (Muthén, 2008). On the other hand, PLS path modeling is avowedly a method based on approximation, and a method designed for situations involving a less firmly established theoretical base (Wold, 1982). Therefore, it may be best for researchers simply to express appropriate caution in interpreting results from PLS path analysis involving multiple groups.

5. UNOBSERVED HETEROGENEITY IN PLS PATH MODELING

Modeling segments based on a priori information suffers from serious limitations. In many instances, substantive theory on the variables causing heterogeneity is unavailable or incomplete. Furthermore, observable characteristics such as gender, age, or usage frequency are often insufficient to capture heterogeneity adequately (Wedel & Kamakura, 2000). Heterogeneity is frequently unobservable and its true sources are unknown.

Different approaches, designed to capture and treat unobserved heterogeneity in PLS path models, have been proposed lately and reviewed by Sarstedt (2008a). These procedures generalize, for example, finite mixture modeling, typological regression, and genetic algorithm approaches to PLS path modeling. Fig. 2 shows a taxonomy of available procedures including key references.

Sánchez and Aluja (2006) introduced a decision tree–like structure approach in which segments are represented by the outer nodes of a segmentation tree. Their path modeling segmentation tree (PATHMOX) algorithm has been specifically designed to take into account external information, such as demographic variables, whose values are used to identify and differentiate segments, thus enhancing segment profiling. Using the external variables, PATHMOX makes two-way splits and estimates the PLS model for each subgroup thus defined. Just as a decision tree seeks to maximally discriminate, PATHMOX looks for the largest differences between subgroups in terms of the model parameter estimates (Trinchera, 2007). Once an optimal first split is
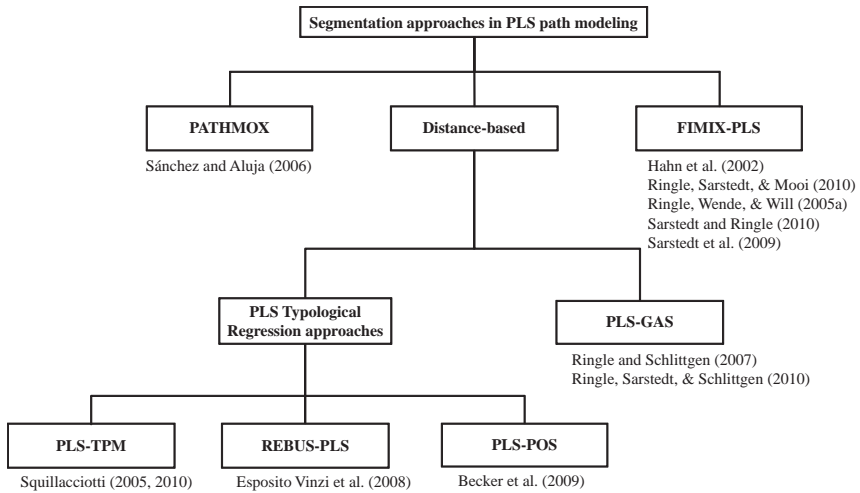
Fig. 2. Latent Class Approaches in PLS Path Modeling.

chosen, the algorithm then looks for further splits of those initial subgroups that again maximize differences in parameter estimates within subgroups. PATHMOX thus requires additional external data (Trinchera, 2007), and depends on the heterogeneity within the sample conforming to straightforward differences in the values of those external variables.

Another class of approaches uses distance measures to identify local models that are typical of specific segments. Squillacciotti (2005, 2010) has introduced the PLS typological path modeling (PLS-TPM) procedure, which has been designed for prediction-oriented path model segmentation to prevent imposing distributional assumptions on latent or manifest variables. This approach begins by estimating one global model for all observations and then clusters observations based on residuals relative to the global model. However, this measurement is not across the whole model, but relative to one single "target" block in the model (Trinchera, 2007). The researcher then chooses the number of classes or subgroups based on a dendrogram from this clustering of residuals. Next, individual models are estimated for each class. With each round of estimation, cases may be reassigned to different classes with the goal of minimizing an overall "distance" measure based on redundancy – the ability of the exogenous latent variables to account for the variance of the endogenous observed variable, as mediated by the endogenous latent variables (Trinchera, 2007) – across the entire data set, given the fixed number of classes. As noted above,

the distance measure in PLS-TPM relates to a single target-dependent construct and associated observed variables. In models where the choice of a single target construct is unclear, PLS-TPM is less valuable (Trinchera, 2007).

Esposito Vinzi, Squillacciotti, Trinchera, and Tenenhaus (2008) have presented an improvement of PLS-TPM: response-based unit segmentation in PLS path modeling (REBUS-PLS), which has been designed to overcome methodological problems of the PLS-TPM approach by taking hetero-geneity in endogenous and exogenous latent variables' inner and outer models into account. Here the distance measure (now labeled a "closeness measure" – see Trinchera, 2007) is a function of average communality (correlation of observed variables with their associated latent variables) and average structural R^2 (variance explained for the dependent latent variables) across the whole model. Otherwise, REBUS-PLS proceeds in much the same fashion as PLS-TPM. This alternative is included, for example, in the PLSPM package (Sánchez & Trinchera, 2010) for the R open source statistical programming language, and is available as a free download from the Comprehensive R Archive Network (CRAN; www. cran.r-project.org).

In this line of research, Ringle and Schlittgen (2007) consider the PLS segmentation task as an NP-complete data assignment problem of allocating observations to a set of segments. The solution time for NP-complete problems increases rapidly as the size of the problem grows, and there is no known efficient algorithm for speeding the process. Here, the size of the problem increases with the number of observations, the number of variables, and the number of classes. As it is impractical to test for all possible assignments, the authors propose a new kind of segmentation approach, PLS genetic algorithm segmentation (PLS-GAS), which uses a genetic algorithm to account for heterogeneity when estimating measurement and inner model relationships (Ringle, Sarstedt, & Schlittgen, 2010).

Finally, Becker, Ringle, and Völckner (2009) present the prediction-oriented segmentation method for PLS path modeling (PLS-POS). Like with PLS-GAS, the methodology has been designed to overcome several problems and limitations of existing PLS segmentation methods and shows very promising results in initial simulation studies.

An important improvement in the field of treating unobserved hetero-geneity in PLS path models was presented by Hahn et al. (2002) and later advanced by Ringle, Wende, and Will (2005a), Ringle, Sarstedt, and Mooi (2010), and Ringle, Wende, and Will (2010). FIMIX-PLS combines the strengths of the PLS method with the advantages of the maximum

likelihood estimation when deriving market segments with the help of finite mixture models. A finite mixture approach to model-based clustering assumes that the data originate from a source of several subpopulations (segments). Each segment is modeled separately and the overall population is a mixture of these segments (e.g., McLachlan & Peel, 2000; Frühwirth-Schnatter, 2006). That is, each data point x_i is taken to be a realization of the mixture density with K ($K < \infty$) segments, where

$$f_{i|k}(\mathbf{x}_i|\boldsymbol{\theta}_k) = \sum_{k=1}^{K} \rho_k f_{i|k}(\mathbf{x}_i) \tag{15}$$

with $\rho_k > 0$, $\forall k$, $\sum_{k=1}^{K} \rho_k = 1$, $f_{i|k}(\cdot)$ being a density function, and $\boldsymbol{\theta}_k$ depicting the segment-specific vector of unknown parameters for segment k. The set of mixing proportions ρ_k determines the relative mixing of the K segments in the mixture. Based on the fitted posterior probabilities of segment membership, a probabilistic clustering of the data into K clusters can be obtained. As a consequence, homogeneity is no longer defined in terms of a certain set of common scores but at a distributional level, whereas the magnitude of the relationships between latent variables may vary as a function of segment (Bauer & Curran, 2004). Consequently, finite mixture modeling enables researchers and practitioners to cope with heterogeneity in data by clustering observations and estimating parameters simultaneously, thus avoiding well-known biases that occur when models are estimated separately (Fraley & Raftery, 2002; Oh & Raftery, 2003).

6. THE FIMIX-PLS METHODOLOGY

This chapter uses the FIMIX-PLS method to illustrate the tasks and challenges involved in addressing latent homogeneity in PLS path modeling. This section takes an extended look at the FIMIX-PLS approach. The next section follows an empirical example – an application of FIMIX-PLS to the analysis of customer satisfaction and reputation data.

6.1. The FIMIX-PLS Algorithm

Building on the guiding articles by Jedidi et al. (1997a) and Hahn et al. (2002), a systematic application of FIMIX-PLS involves the steps illustrated in Fig. 3 (Ringle et al., 2010).
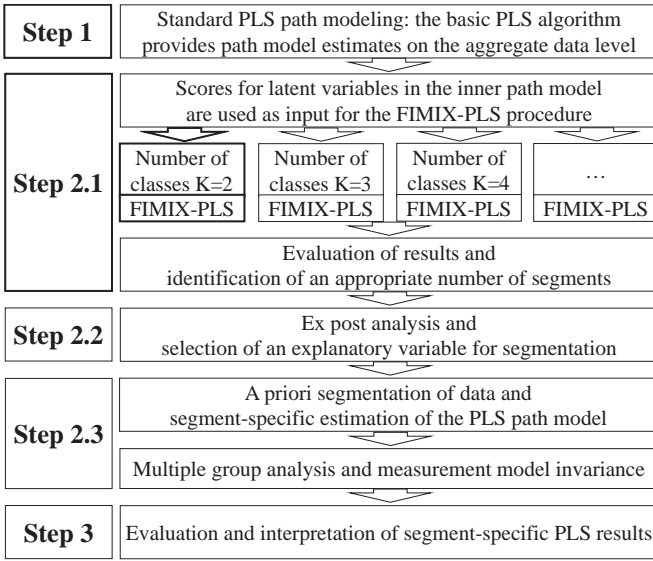
Fig. 3.   Analytical Steps of FIMIX-PLS.

In Step 1 of the FIMIX-PLS methodology, a path model is estimated by using the standard PLS algorithm for path modeling with latent variables and the data of manifest variables in the outer models. The resulting scores of the latent variables in the inner path model are then employed to run the FIMIX-PLS algorithm in Step 2. The following equation expresses a modified presentation of the relationships:

$$B\eta_i + \Gamma\xi_i = \zeta_i \qquad (16)$$

The segment-specific heterogeneity of path models is concentrated in the estimated relationships between latent variables. FIMIX-PLS captures this heterogeneity and calculates membership probabilities for each respondent belonging to each of the K segments (with the number K specified by the researcher). The segment-specific distributional function is defined as follows, assuming that η_i is distributed as a finite mixture of conditional multivariate normal densities $f_{i|k}(\cdot)$:

$$\eta_i \sim \sum_{k=1}^{K} \rho_k f_{i|k}(\eta_i | \xi_i, B_k, \Gamma_k, \Psi_k) \qquad (17)$$

Substituting $f_{i|k}(\eta_i|\xi_i, B_k, \Gamma_k, \Psi_k)$ results in the following equation[1]:

$$
\begin{aligned}
\boldsymbol{\eta}_i = \sum_{k=1}^{K} \rho_k &\left[\frac{1}{(2\pi)^{M/2}\sqrt{|\boldsymbol{\Psi}_k|}} \right] \exp\left\{ -\frac{1}{2}((I - \mathbf{B}_k)\boldsymbol{\eta}_i \right. \\
&\left. + (-\boldsymbol{\Gamma}_k)\xi_i)'\boldsymbol{\Psi}_k^{-1}((I - \mathbf{B}_k)\boldsymbol{\eta}_i + (-\boldsymbol{\Gamma}_k)\xi_i) \right\}
\end{aligned}
\tag{18}
$$

The likelihood of the observed data is given by

$$
L = \prod_{i=1}^{I}\left[\sum_{k=1}^{K} \rho_k \left[\frac{|\mathbf{B}_k|}{(2\pi)^{M/2}\sqrt{|\boldsymbol{\Psi}_k|}} \exp\left\{ -\frac{1}{2}(\mathbf{B}_k\boldsymbol{\eta}_i + \boldsymbol{\Gamma}_k\boldsymbol{\xi}_i)'\boldsymbol{\Psi}_k^{-1}(\mathbf{B}_k\boldsymbol{\eta}_i + \boldsymbol{\Gamma}_k\boldsymbol{\xi}_i) \right\} \right] \right]
\tag{19}
$$

which can be expressed as

$$
L = \prod_{i=1}^{I}\left(\sum_{k=1}^{K} \rho_k f(\eta_i|\xi_i, B_k, \Gamma_k, \Psi_k) \right)
\tag{20}
$$

Following from this, the log-likelihood of the model is

$$
\ln L = \sum_{i=1}^{I} \ln\left(\sum_{k=1}^{K} \rho_k f(\eta_i|\xi_i, B_k, \Gamma_k, \Psi_k) \right)
\tag{21}
$$

Eq. (22) represents an expectancy-maximization or EM approach (Dempster, Laird, & Rubin, 1977), maximizing the log-likelihood $\ln L_c$ for the complete data problem:

$$
\ln L_c = \sum_{i=1}^{I} \sum_{k=1}^{K} z_{ik} \ln(f(\eta_i|\xi_i, B_k, \Gamma_k, \Psi_k)) + \sum_{i=1}^{I} \sum_{k=1}^{K} z_{ik} \ln(\rho_k)
\tag{22}
$$

An EM formulation of the FIMIX-PLS algorithm (Fig. 4) is used in statistical computations to maximize the likelihood and to ensure convergence in this model. The expectation of Eq. (22) is calculated in the E-step, where z_{ik} is 1 if subject i belongs to segment k (0 otherwise). The segment size ρ_k, the parameters ξ_i, B_k, Γ_k, and Ψ_k of the conditional probability function (as results of the M-step), and provisional estimates (expected values), $E(z_{ik}) = P_{ik}$, for z_{ik} are computed according to Bayes' (1763/1958) theorem (E-step in Fig. 4).

Eq. (22) is maximized in the M-step (Fig. 4). Compared with the original finite mixture SEM technique (Jedidi et al., 1997a), this part of the FIMIX-PLS algorithm comprises the most important changes in order to fit the finite mixture approach to PLS. Initially, new mixing proportions ρ_k are calculated by the average of the adjusted expected values P_{ik} that result from the previous

```
// initial E-step
    set random starting values for P_ik ; set last_{lnL_c} = large number; set 0 < stop criterion < 1

// start with M-step

repeat do

begin

// the E-step starts here
    if Δ > stop criterion then
      begin
```

$$P_{ik} = \frac{\rho_k f_{i|k}(\eta_i \mid \xi_i, B_k, \Gamma_k, \Psi_k)}{\sum_{k=1}^{K} \rho_k f_{i|k}(\eta_i \mid \xi_i, B_k, \Gamma_k, \Psi_k)} \forall i, k$$

```
      last_{lnL_c} = current_{lnL_c}
      end

// the M-step starts here
```

$$\rho_k = \frac{\sum_{i=1}^{I} P_{ik}}{I} \forall k$$

```
    determine B_k, Γ_k, Ψ_k, ∀k
    calculate current_{lnL_c}
```

$$\Delta = \left| last_{lnL_c} \right| - \left| current_{lnL_c} \right|$$

```
end

until Δ < stop criterion
```

Fig. 4. The FIMIX-PLS Algorithm.

E-step. Thereafter, optimal parameters for B_k, Γ_k, and Ψ_k are determined by independent OLS regressions (one for each relationship between latent variables in the inner model). ML estimators of coefficients and variances are assumed to be identical to OLS predictions. The following equations are applied to obtain the regression parameters for latent endogenous variables:

$$Y_{mi} = \eta_{mi} \quad \text{and} \quad X_{mi} = (E_{mi}, N_{mi})' \tag{23}$$

$$E_{mi} = \begin{cases} \{\xi_1, \ldots, \xi_{A_m}\}, & A_m \geq 1, a_m = 1, \ldots, A_m \wedge \xi_{a_m} \text{ is the regressor of } m \\ \varnothing \text{ else} \end{cases}$$

$$\tag{24}$$

$$N_{mi} = \begin{cases} \{\eta_1, \ldots \eta_{B_m}\}, & B_m \geq 1, b_m = 1, \ldots, B_m \wedge \eta_{b_m} \text{ is the regressor of } m \\ \varnothing \text{ else} \end{cases}$$

$$(25)$$

The closed-form OLS analytical formula for τ_{mk} and ω_{mk} is expressed as follows:

$$\tau_{mk} = ((\gamma_{a_m mk}), (\beta_{b_m mk})) = [X'_m P_k X_m]^{-1} [X'_m P_k Y_m] \qquad (26)$$

$$\omega_{mk} = \text{cell } (m \times mk) \text{ of } \Psi_k = \frac{(Y_m - X_m \tau_{mk})'((Y_m - X_m \tau_{mk})P_k)}{I\rho_k} \qquad (27)$$

As a result, the M-step determines new mixing proportions ρ_k, and the independent OLS regressions are used in the next E-step iteration to improve the outcomes of P_{ik}. The EM algorithm stops whenever $\ln L_c$ no longer improves, and an a priori specified convergence criterion is reached.

A substantial body of simulation evidence shows that FIMIX-PLS reliably identifies a priori formed segments in idealized situations with almost no noise in the distinctive, artificially generated sets of data (Ringle et al., 2005a). FIMIX-PLS also appropriately classifies two a priori generated groups of artificial data according to their distinctive inner PLS path model coefficients when the noise and, thus, the fuzziness of segments increases considerably (Ringle et al., 2010). Esposito Vinzi, Ringle, Squillacciotti, and Trinchera (2007) reveal that FIMIX-PLS also performs extremely well in situations with unbalanced segments and non-normal data. Likewise, Tenenhaus, Mauger, and Guinot (2010) show that the endogenous latent variables approach a normal distribution, even if both the manifest and exogenous latent variable scores are far from normal (Hair et al., 2011). Consequently, the potential limitation of FIMIX-PLS that the approach imposes a distributional assumption on the endogenous latent variables has no far-reaching practical implications.

6.2. Identifying an Appropriate Number of Segments

When applying finite mixture models to empirical data, the actual number of segments K is usually unknown. Retaining the true number of segments is, however, crucial, as many managerial decisions rely on this decision (Sarstedt, 2008b). Various tests and heuristics have been proposed to determine the number of segments, but this so-called model selection

problem is a longstanding and still unresolved issue with the least satisfactory statistical treatment.

An obvious way to determine the number of segments in the mixture model is to test the null hypothesis of K segments against the alternative hypothesis of $K+1$ segments by carrying out a standard likelihood ratio test (LRT). However, as pointed out by several authors (e.g., McLachlan & Peel, 2000; Wedel & Kamakura, 2000), the LRT is unsuitable in a finite mixture framework. Although the two models are conceptually nested, the model with only K segments constrains membership probabilities for the $K+1$ segment to 0, a boundary point (Muthén, 2008). As a result, the test statistic does not follow a central χ^2-distribution under the null hypothesis.

In light of this problem, researchers frequently revert to a heuristic approach in the form of model selection criteria to determine the number of segments that can be categorized into information and classification criteria (McLachlan & Peel, 2000; Sarstedt et al., 2011). Information criteria are based on a penalized form of the likelihood, as they simultaneously take the goodness of fit (likelihood) of a model and the number of parameters used to achieve that fit into account. These criteria therefore correspond to a penalized likelihood function (i.e., the negative log-likelihood plus a penalty term that increases with the number of parameters and/or the number of observations; Sarstedt, 2008b; Sarstedt et al., 2011). Information criteria generally favor models with large log-likelihood values and few parameters, and are scaled so that a lower value represents a better fit.

In keeping with substantive theory, applied researchers usually use a combination of criteria to guide their decision. Popular criteria include the Akaike information criterion (AIC; Akaike, 1973), the modified AIC with factor 3 (AIC$_3$; Bozdogan, 1994), the consistent AIC (CAIC; Bozdogan, 1987), and the Bayesian information criterion (BIC; Schwarz, 1978). Although these heuristics account for overparameterization through the integration of a penalty term, they do not ensure the sufficient separation of the segments in the selected solution. As the targeting of markets requires the segments to be differentiable – the segments should be conceptually distinguishable and should respond differently to different marketing mix elements – this point is of great practical interest.

Within this context, the normed entropy statistic (EN; Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993) is a critical criterion for analyzing whether segment-specific FIMIX-PLS results produce well-separated clusters:

$$\text{EN} = 1 - \frac{\sum_{i=1}^{I} \sum_{k=1}^{K} -P_{ik} \ln(P_{ik})}{I \ln(K)} \tag{28}$$

The EN is limited to between 0 and 1, and the quality of the separation of derived classes is commensurate with the increase in EN. Applications of FIMIX-PLS furnish evidence that EN values of below .5 indicate fuzzy class memberships that prevent meaningful segmentation and limit the applied value of the segmentation exercise.

Sarstedt et al. (2011) evaluate the performance of several model selection criteria including the ones described above. Their results show that a joint consideration of AIC_3 and CAIC proves valuable in most settings as these criteria indicate the correct number of segments in 85% of all cases where both point to the same segment number. Likewise, AIC's pronounced tendency to overestimate the correct number of segments as well as ICL-BIC's (Biernacki, Celeux, & Govaert, 2000) tendency to underestimate the correct number of segments can guide model selection in practical applications. Conversely, entropy-based measures proved unsuitable for deciding on the number of segments. However, to ensure managerially relevant segmentation outcomes, researchers should not rely solely on AIC_3 and CAIC (or AIC and ICL-BIC in the context described above). Researchers should also ensure that segments are sufficiently separated.

Segment size – the number of cases falling into each segment – is another useful indicator to prevent the selection of too many classes. The EM algorithm always converges to the prespecified number of K segments. Compared with alternative procedures (e.g., the Newton–Raphson method), this is advantageous, but when an analysis selects an ''extra'' segment, some observations are ''forced'' to belong to the extraneous segment even though they truly fit in another segment. In such situations, the additional segment is usually very small and accounts for only a marginal portion of heterogeneity in the overall data set. Such tiny subsets of the sample are also unlikely to translate into meaningful market segmentation opportunities.

6.3. Ex Post Analysis

In situations where FIMIX-PLS results indicate that in the overall data set, heterogeneity can be reduced by fitting a finite mixture model with K segments, turning this statistical finding into actionable recommendations requires that the researcher interprets the subgroups in terms of managerially meaningful variables. This involves an ex post search for explanatory variables as noted in Step 2.2 (ex post analysis) in Fig. 3. These variables

must imply a similar grouping of respondents to that indicated by the FIMIX-PLS results.

Moreover, the ex post analysis is important from a methodological point of view. Measurement modes can only be updated through the ex post analysis, thus leading to segment-specific outer model parameter estimates.

Correspondingly, data are segmented and used as new input for segment-specific path model computations with PLS. This process generates differentiated PLS modeling results in both inner and outer models and facilitates multiple group PLS analyses (Chin & Dibbern, 2010). This kind of analysis is essential for exploiting FIMIX-PLS findings for PLS path modeling and is the most challenging analytical step to accomplish.

Ramaswamy et al. (1993) suggest a systematic search to uncover explanatory variables that fit well with the results in terms of segment affiliations. Specifically, the authors suggest estimating the following model for each segment k:

$$Q_{ik} = \sum_{c}^{C} Z_{ic}\omega_{ck} + v_{ik} \tag{29}$$

where $Q_{ik} = (\ln(P_{ik}/P_{i.}))$, and $P_{i.} = (\prod_{k=1}^{K} P_{ik})^{1/K}$ is the geometric mean of the probabilities of segment membership, Z_{ic} the value of the explanatory variable c for observation i, ω_{ck} the impact coefficient for variable c for segment k, and v_{ik} a random normal disturbance (Ramaswamy et al., 1993). Likewise, researchers may apply a discriminant or logistic regression analysis to determine which predictor variables contribute most of the intersegment differences. Ringle, Sarstedt, and Mooi (2010) and Sarstedt, Ringle, and Schwaiger (2009) apply a CHAID procedure to identify potential explanatory variables, but other tree algorithms for classification problems such as QUEST may likewise be used. Different from Ramaswamy et al.'s (1993) approach that relies on (modified) probabilities of segment membership, Ringle, Sarstedt, and Mooi (2010) use the segment affiliation variable z_{ik} as the dependent variable in these types of analysis. For the most part, a logical search focuses on managerial interpretation of results. In this case, relevant variables for explaining the expected differences in segment-specific PLS path model computations are examined for their ability to form groups of observations that match FIMIX-PLS results. Finally, PLS multiple group analyses allow comparing segment-specific path model estimates and testing whether the path coefficients differ significantly between the segments.

7. EMPIRICAL EXAMPLE

An exemplary model, which analyzes the effects of corporate-level marketing activities on corporate reputation and, finally, on customer satisfaction and loyalty, is used to demonstrate the applicability of FIMIX-PLS. In keeping with the analysis by Eberl (2010), it can be argued that marketing activities do not influence customers' loyalty decisions directly but do so via the mediating construct of corporate reputation, which is itself conceptualized as having two dimensions (Schwaiger, 2004). One dimension comprises all of the company's cognitive evaluations (*competence*), whereas the second dimension captures affective judgments (*likeability*). *Competence* and *likeability* were each operationalized by means of three indicators identified as exchangeable and thus treated reflectively.

Past research identified four exogenous driver constructs – *quality*, *performance*, *attractiveness*, and *corporate social responsibility (CSR)* – which have been shown to be robust across different data sets, countries, and industries (e.g., Schwaiger, 2004; Eberl & Schwaiger, 2005; Wilczynski, Sarstedt, & Melewar, 2009). These constructs were thus operationalized using a total of 21 formative indicators (Gudergan, Ringle, Wende, & Will, 2008) that measure the levers of corporate-level marketing activities. In keeping with the analysis by Eberl (2010), it was hypothesized that the two dimensions of corporate reputation relate to *customer satisfaction*, while *likeability* also influences *customer loyalty* directly. *Customer satisfaction* and *loyalty* were thus operationalized by means of reflective measures that are well known from empirical marketing studies (Zeithaml, Berry, & Parasuraman, 1996). Fig. 5 illustrates the path model under consideration.

The PLS path model analysis draws on four major service providers in Germany's mobile communications market, including two large providers who had a combined market share of more than 74% in 2005. Data were collected by means of computer-assisted telephone interviews from a representative sample of the German overall population. Each respondent rated the reputation and driver construct indicators on seven-point Likert scales. Satisfaction and loyalty were surveyed in respect of the interviewees' own service providers. The survey also tested several sociodemographic characteristics. The sample data set presented in this chapter comprises $N = 180$ subjects.[2]

As depicted in Fig. 3, the basic PLS algorithm (Wold, 1982; Lohmöller, 1989) is applied to estimate the overall model by means of SmartPLS 2.0 (Ringle et al., 2005b) in Step 1. We follow the suggestions for a PLS path model evaluation by Chin (1998) and apply the systematic approach for this
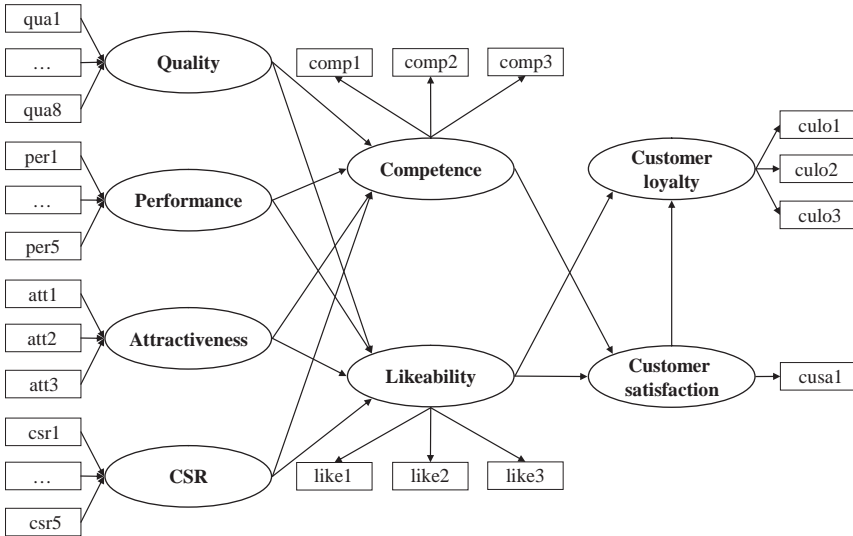
Fig. 5. Research Model for the Empirical Example.

kind of analysis recommended by Henseler et al. (2009). All the minimum requirements for the outer models and inner model are met. For example, the loadings of the reflective set of outer relationships clearly range above .7; the values of both the composite reliability ρ_c and Cronbach's α are uniformly high around .8, thus meeting the stipulated thresholds (Nunnally & Bernstein, 1994). Likewise, all reflectively measured constructs exhibit discriminant validity (Fornell & Larcker, 1981). With regard to this global model, the R^2 values of the constructs *competence*, *likeability*, and *customer loyalty* are very acceptable, indicating that both dimensions of corporate reputation are good predictors of loyalty (Table 1). As indicated by Eberl (2010), the rather low value of *customer satisfaction* is not surprising, as intangible assets such as corporate reputation represent only one of the numerous determinants of this construct.

An evaluation of the path coefficients' significance draws on *t*-values that were calculated via a bootstrapping procedure (5,000 subsamples; individual-level sign changes; Henseler et al., 2009). The analysis of the interrelations between the constructs reveals that most path relationships are significant at a level of .05 (see Table 1). The analysis shows that corporate reputation's affective dimension clearly dominates in explaining customer satisfaction. This implies that in the German telecommunication

Table 1.   Analytical Results of the Aggregate-Level Data Analysis.

	PLS Path Coefficients
Quality → competence	.383**
	(7.502[†])
Performance → competence	.375**
	(7.680[†])
Attractiveness → competence	.003
	(.218[†])
CSR → competence	.113**
	(3.031)
Quality → likeability	.397**
	(7.843[†])
Performance → likeability	.085*
	(1.836[†])
Attractiveness → likeability	.184**
	(3.718[†])
CSR → likeability	.202**
	(4.290)
Competence → customer satisfaction	.155**
	(2.721[†])
Likeability → customer satisfaction	.454**
	(8.761[†])
Customer satisfaction → customer loyalty	.522**
	(14.960[†])
Likeability → customer loyalty	.348**
	(9.800[†])
ρ_k	1.0
R^2 (competence)	.641
R^2 (likeability)	.585
R^2 (customer satisfaction)	.316
R^2 (customer loyalty)	.593

(*) Significant at $p < .10$; (**) significant at $p < .05$; ([†]) bootstrap t-value.

market, investments in marketing activities to enhance the perception of corporate competence do not pay off in terms of an increase in customer satisfaction, and thus loyalty. This finding is not surprising given the intangible nature of this industry's products, which makes these products hard to distinguish (Eberl, 2010). Much of the strategic benefit comes from a differentiation with regard to the affective dimension of corporate reputation.

However, due to unobserved heterogeneity in the data, this aggregate-level analysis might be misleading and the usage of FIMIX-PLS could
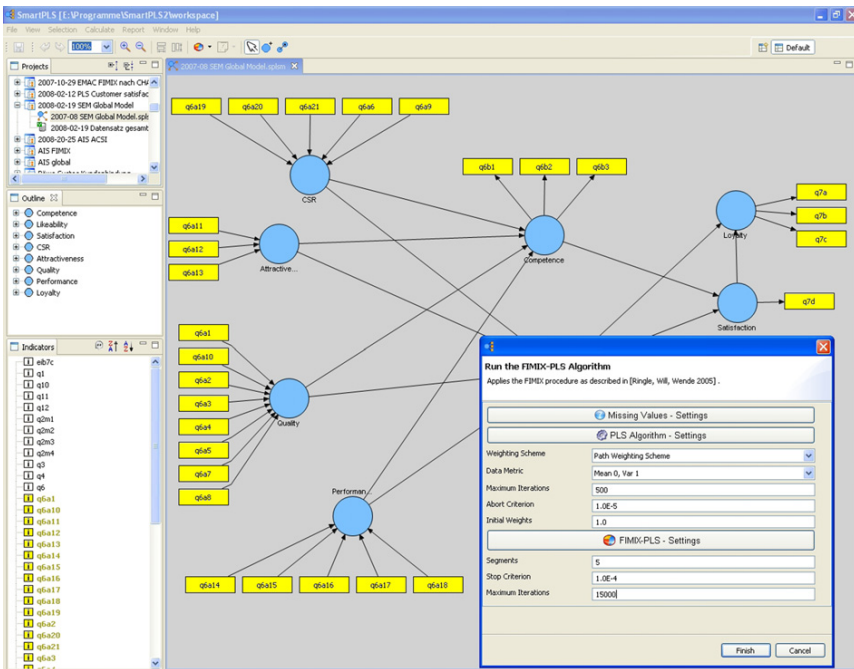
Fig. 6.   Screenshot of SmartPLS with FIMIX-PLS Settings.

provide further differentiated results. The FIMIX-PLS module SmartPLS 2.0 (Ringle, Wende, & Will, 2005b) was applied to segment observations based on the estimated latent variable scores (Step 2.1 in Fig. 3). Fig. 6 shows a screenshot of the module in SmartPLS.

Initially, FIMIX-PLS results were computed for two segments. Thereafter, the number of segments was increased successively. A comparison of the segment-specific information and classification criteria reveals that in almost all cases, the minimum criterion value for a two-segment solution was achieved (Table 2). Most notably, AIC_3 and CAIC both indicate the same number of segments, which provides strong support for a two-segment solution (Sarstedt et al., 2011). Across all solutions, EN achieved values clearly above .6, thus indicating well-separated segments. The choice of two segments is additionally supported by the FIMIX-PLS segment sizes as well as the a priori classification on the basis of probabilities of membership (Table 3). For example, in the five-segment solution, one segment comprises only 7.2% of all observations.

Table 2. Model Selection.

	$K=2$	$K=3$	$K=4$	$K=5$	$K=6$
AIC	1,557.822	1,580.439	1,631.934	1,590.232	1,616.995
BIC	1,663.189	1,740.087	1,845.862	1,858.440	1,939.483
CAIC	1,696.189	1,790.087	1,912.862	1,942.440	2,040.483
AIC_3	1,590.822	1,630.439	1,698.934	1,674.232	1,717.995
EN	.610	.658	.649	.748	.731

Table 3. Relative Segment Sizes for Different Numbers of Segments.

	$k=1$ (%)	$k=2$ (%)	$k=3$ (%)	$k=4$ (%)	$k=5$ (%)	$k=6$ (%)	Sum (%)
$K=2$	38.9	61.1					100
$K=3$	40.5	43.9	15.6				100
$K=4$	45.0	11.6	16.7	26.7			100
$K=5$	33.9	23.9	12.8	7.2	22.2		100
$K=6$	24.4	23.9	36.1	5.0	5.0	5.6	100

To estimate the segment-specific path coefficients in the outer models, observations were assigned to the two segments according to each observation's maximum a posterior probability of segment membership. Table 4 provides an overview of the FIMIX-PLS results in respect of two segments, the mixing proportions of each segment ρ_k, and the R^2 value of each endogenous latent constructs. The empirical example also draws on reflective latent variables that require measurement model invariance to be tested before multiple group analyses can be carried out. To test for measurement invariance, we use the nonparametric, permutation test–based multiple group analysis by Chin and Dibbern (2010) to test – among other criteria (Steenkamp & Baumgartner, 1998) – if the group-specific (a) outer loadings and (b) the AVE/ρ_c outcome per reflectively measured latent construct differ significantly (see also Ringle et al., 2011). According to this analysis, measurement model invariance is not an issue in the PLS multiple group analysis that builds on the FIMIX-PLS results. As a consequence, we carried out a multiple group comparison using Henseler's (2007) nonparametric approach in the next step of the analysis.

When comparing the aggregate-level analysis with the results derived from the FIMIX-PLS procedure, one finds that all endogenous constructs exhibit increased R^2 values, ranging between 1.2% (likeability) and 39.7% (customer satisfaction) higher than that in the global model. Likewise, the

Table 4. Analytical Results of the FIMIX-PLS Analysis.

Data Analysis Strategy	FIMIX-PLS			Ex Post Analysis		
	$k=1$	$k=2$	|Diff|	$k=1$	$k=2$	|Diff|
Quality → competence	.682** (27.754[†])	.232** (4.160[†])	.450**	.701** (21.085[†])	.167** (3.155[†])	.534**
Performance → competence	.521** (17.773[†])	.297** (5.229[†])	.224**	.281** (6.511[†])	.471** (9.369[†])	.190*
Attractiveness → competence	−.041* (2.374[†])	.060 (1.499[†])	.101**	−.133** (3.937[†])	.078** (2.125[†])	.211**
CSR → competence	.231** (11.332[†])	.247** (5.922[†])	.016**	.040 (1.323[†])	.161** (4.248[†])	.121
Quality → likeability	.516** (11.458[†])	.343** (7.184[†])	.173*	.487** (11.447[†])	.383** (6.490[†])	.104
Performance → likeability	.107** (2.674[†])	.092** (2.042[†])	.015	.029 (1.056[†])	.072 (1.455[†])	.043
Attractiveness → likeability	.246** (7.361[†])	.178** (3.633[†])	.068	.359** (8.355[†])	.062 (1.426[†])	.297**
CSR → likeability	.142** (3.390[†])	.193** (4.329[†])	.051	.074* (1.909[†])	.291** (6.920[†])	.217**
Competence → customer satisfaction	.834** (43.310[†])	−.134** (2.538[†])	.968**	.192** (3.124[†])	.131** (2.552[†])	.061
Likeability → customer satisfaction	.114** (5.281[†])	.461** (10.330[†])	.347**	.325** (5.978[†])	.526** (10.800[†])	.201**
Customer satisfaction → customer loyalty	.748** (25.086[†])	.480** (16.335[†])	.268**	.423** (9.827[†])	.548** (17.069[†])	.125*
Likeability → customer loyalty	.187** (6.142[†])	.370** (12.998[†])	.183**	.483** (13.654[†])	.309** (9.431[†])	.174**
ρ_k	.389	.611		.361	.639**	
R^2 (competence)	.649			.666		
R^2 (likeability)	.601			.597		
R^2 (customer satisfaction)	.440			.319		
R^2 (customer loyalty)	.627			.599		

(*) Significant at $p<.10$; (**) significant at $p<.05$; ([†]) bootstrap t-values.
Significance testing of \|diff\| uses Henseler's (2007) approach for multiple group analyses.

relative importance of the antecedents of corporate reputation differs quite substantially between the two segments. More importantly, there are different drivers of customer satisfaction in each segment. Although in the second segment, satisfaction is primarily driven by likeability (analogous to the global model), the cognitive dimension clearly dominates in explaining satisfaction in the first segment with an extremely high path coefficient of .834. With a single exception, all paths are significant at a level of .05. The multiple group comparison shows that most path coefficients differ significantly across the two segments. These results demonstrate that an aggregate-level analysis can in fact be misleading and that by grouping segments of customers, important implications for marketing mix programs can be achieved.

The next step involves the identification of explanatory variables that best characterize the two uncovered segments (Step 2.2 in Fig. 3). We consequently applied the QUEST algorithm (Loh & Shih, 1997) using IBM SPSS Answer Tree 3.1 on the covariates to assess if splitting the sample based on sociodemographic variables' modalities leads to a significant discrimination between the dependent measures of segment affiliation.[3] The analysis showed that only the variable that captured the interviewee's own service provider showed any potential for a meaningful segmentation. This result is also supported by binary logistic regression results showing that this variable is the only one that has a significant effect on the variable (Wald test, 5.729, $p = .017$). In accordance with these outcomes, segment one comprises customers of one of the two large mobile service providers, whereas the second segment consists of the remaining providers. This result is surprising, as one might expect differences between the customers of the two larger and smaller service providers. The resulting segment sizes are almost equal to the previous analysis, and cross-tabulation shows that the classification corresponds to 56.1% with the FIMIX-PLS classification. Evaluation of the PLS estimates (Chin, 1998; Henseler et al., 2009) of these two a priori segmented sets of data confirms the satisfactory results. All R^2 values range higher than those in the global model, indicating an improved goodness of fit (Table 4).

Segment-specific path analyses show similar results when compared with the FIMIX-PLS with regard to the driver constructs. For example, the influence of quality on competence differs substantially between the two segments ($k = 1$: .701; $k = 2$: .167), whereas the relationship is balanced in the global model (.383). Most differences between the segments in the ex post analysis are significant at .05, indicating that the segment-specific influence of corporate reputation's antecedents varies in the population.

However, segment-specific influences on the key construct customer satisfaction are less pronounced compared with the FIMIX-PLS analysis. Similar results are obtained regarding the antecedents of corporate reputation, where several differences in path coefficients are significant. This suggests that customers react differently to corporate-level marketing activities. For example, changes in the driver constructs should thus be targeted individually. From a marketing viewpoint, this result is important for companies to successfully enhance customer satisfaction via the mediating affective dimension corporate reputation.

8. SUMMARY AND CONCLUSION

Unobserved heterogeneity and measurement errors are epidemic problems in social sciences. Jedidi et al. (1997a) have addressed these problems with respect to SEM. The aim of this chapter has been to review options for dealing with heterogeneity in PLS path modeling. Currently, a variety of approaches and techniques are available, with a similar variety of drawbacks and limitations. This chapter examined the FIMIX-PLS approach in some detail (Hahn et al., 2002), but the key conclusion to be drawn from this manuscript is that researchers need to address heterogeneity in their inner models. For researchers and marketers, heterogeneity remains both a challenge and an opportunity. If ignored, heterogeneity can produce misleading results, giving rise to a model with parameter estimates that may be incorrect for every single respondent. If acknowledged, heterogeneity may well force researchers to require larger sample sizes so that models can be reliably estimated for all meaningful segments. At the same time, dealing with heterogeneity offers researchers the opportunity to better fit inner models to the patterns of variance actually observed in the data, and perhaps to understand respondents at a finer level. For marketers, of course, segmentation – along with targeting and positioning – is a core function and capability, and a key to profitability in a challenging competitive environment. Global competition and pressures toward commoditization continually threaten to reduce any market to the least common denominator. Understanding heterogeneity in the marketplace puts marketers in a position to best understand the needs not only of the niche customer, but also of every customer. Advances in PLS path modeling tools for dealing with heterogeneity make it feasible for researchers to routinely take this issue into account in their research. We can only expect that this issue will gain even greater prominence in the years ahead.

NOTES

1. Note that this description of the FIMIX-PLS procedure differs from Hahn et al.'s (2002) original presentation that exhibits several inconsistencies (see Sarstedt, Becker, Ringle, & Schwaiger, 2011).

2. The data of this analysis are available from the authors on request.

3. Likewise, Shih's (2005) software program QUEST may be used, which is freely available at http://www.stat.wisc.edu/~loh/quest.html.

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APPENDIX

Table A.1.   Explanation of Symbols.

A_m	Number of exogenous variables as independent variables in regression m
a_m	Exogenous variable a_m with $a_m = 1, \ldots, A_m$
B_m	Number of endogenous variables as independent variables in regression m
b_m	Endogenous variable b_m with $b_m = 1, \ldots, B_m$
$\gamma_{a_m mk}$	Regression coefficient of a_m in regression m for segment k
$\beta_{b_m mk}$	Regression coefficient of b_m in regression m for segment k
τ_{mk}	$((\gamma_{a_m mk}), (\beta_{b_m mk}))'$ vector of the regression coefficients
ω_{mk}	Cell $(m \times m)$ of ψ_k
c	Constant factor
$f_{i|k}(\cdot)$	Probability for case i given a segment k and parameters $(\cdot)$
I	Number of cases or observations
i	Case or observation i with $i = 1, \ldots, I$
J	Number of exogenous variables
j	Exogenous variable j with $j = 1, \ldots, J$
K	Number of classes
k	Segment or class k with $k = 1, \ldots, K$
M	Number of endogenous variables
m	Endogenous variable m with $m = 1, \ldots, M$
N_k	Number of free parameters defined as $(K-1) + KR + KM$
P_{ik}	Probability of membership of case i to segment k
R	Number of predictor variables of all regressions in the inner model
S	Stop or convergence criterion
V	Large negative number
X_m	Case values of the independent variables for regression m
Y_m	Case values of the independent variables for regression m
z_{ik}	$z_{ik} = 1$, if the case i belongs to segment k; $z_{ik} = 0$ otherwise
ζ_i	Random vector of residuals in the inner model for case i
η_i	Vector of endogenous variables in the inner model for case i
ξ_i	Vector of exogenous variables in the inner model for case i
$BM \times M$	Path coefficient matrix of the inner model
$\Gamma M \times J$	Path coefficient matrix of the inner model
Δ	Difference of current$_{\ln L}$ and last$_{\ln L}$
$B_k \ M \times M$	Path coefficient matrix of the inner model for latent segment k
$\Gamma_k \ M \times J$	Path coefficient matrix of the inner model for latent segment k
$\Psi_k \ M \times M$	Matrix for latent segment k containing the regression variances
ρ	$(\rho_1, \ldots, \rho_K)$, vector of the K mixing proportions of the finite mixture
ρ_k	Mixing proportion of latent segment k

Multiple group comparison

$\beta^{(1)}/\beta^{(2)}$	Vector of true population parameters of population one/two
$b^{(1)}/b^{(2)}$	Vector of parameter estimates of path coefficients in subsample one/two
$n^{(1)}/n^{(2)}$	Number of observations in subsample one/two
g	Bootstrap sample with $g = 1, \ldots, G$

Table A.1. (*Continued*)

G	Number of bootstrap samples
Θ	Unit step function; $\Theta = 1$ if argument exceeds zero; $\Theta = 0$ otherwise

Ex post analysis (Ramaswamy et al., 1993)

ω_{rk}	Impact coefficient for explanatory variable r for segment k
C	Number of explanatory variables
C	Explanatory variable c with $c = 1, \ldots, C$
$P_{i\cdot}$	Geometric mean of the probabilities of segment membership
Q_{ik}	Dependent variable in the ex post analysis
Z_{ir}	Case values of the dependent variables for regression r of individual i
v_{ik}	Random normal disturbance term

PREVIOUS VOLUME CONTENTS

REVIEW OF MARKETING RESEARCH: VOLUME 3

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